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National Register and State Archaeological Landmark Testing for the Austin Independent School District's Additional 2.7 Acre Access Road Project, Travis County, Texas

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Antiquities Permit #6450

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Austin Independent School District

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Abstract

In accordance with the Antiquities Code of Texas (13TAC26) and the National Historic Preservation Act (36CFR800), and the Texas Historical Commission's (THC) written recommendations on December 20, 2012, GTI Environmental, LLC (GTI) presents in this report the results of the National Register of Historic Places (NRHP) and State Archaeological Landmark (SAL) testing investigations. The hand excavated 1 x 1 meter test unit investigation and report was prepared for the Austin Independent School District's (AISD) Additional 2.7 Acre Access Road Project associated with its 27.36 Acre New Bus Terminal Project and 8 Acre Access Road Project in Travis County, Texas.

GTI prepared and submitted an Antiquities Permit Application and Research Design to the Texas Historical Commission (THC) in accordance with 13TAC26.21(d). The THC issued Antiquities Permit No. 6450 to GTI for the SAL testing investigation. The THC is also known as the State Historic Preservation Office (THC/Tx-SHPO), which reviews federal *Undertakings*. The Additional 2.7 Acre Access Road Project is a federal *Undertaking*, because the access road crosses an unnamed tributary of Boggy Creek, which requires consideration and review by the U.S. Army Corps of Engineers (USACE). The testing investigation conforms to the National Historic Preservation Act (NRHP) requirement to assess effects a federal *Undertaking* [36CFR800.16(y)] may have to *Historic Properties* (36CFR800.5). The AISD 27.36 Acre Bus Terminal Project, 8 Acre Access Road Project, and the 2.7 Acre Additional Access Road Project, is considered the overall direct *Area of Potential Effect* (APE), in accordance with 36CFR800.16(d).

GTI conducted the fieldwork from February 6, 2013 through February 14, 2013. The research design proposed five to ten test units within the Additional 2.7 Acre Access Road Project APE. In accordance with 13TAC26.21(d), THC/TX-SHPO guidance was sought prior to research design preparation, and the agency recommended that the Principal Investigator consult with them regarding the total number of test units to be excavated during fieldwork in an effort to exhaust the research potential at 41TV2408 or conduct less than the proposed maximum 10 test units if the results of excavations were less than anticipated [Personal Communication 2012: Bill Martin November 29, 2012]. GTI consulted with THC/TX-SHPO on February 14, 2013 and February 19, 2013. A total of six test units were excavated. The test unit grid was established in a north south axis that would provide a cross sectional profile of the east-west access road alignment. The grid's north south axis was along the topographic toe-slope where the artifacts were more abundant and the soil was the deepest. Archaeologists encountered a single feature in Test Unit 2 and Test Unit6 at the southern boundary of the project APE. A one gallon soil sample was obtained from Test Unit 2 hearth feature. Neither faunal (bones), nor charcoal was visible after screening the soil sample and flotation based on examination through an Olympus microscope that matched the amounts required for AMS dating; i.e. radio carbon dating requires at least 15 to 20 milligrams. Archaeologists attempted to excavate a 1x2 meter unit east and adjacent to Shovel Test 4 (Iruegas 2013) that indicated the deepest part of the prehistoric midden. A large rodent borrow was present further east

of the 1x2m test unit. Excavations in Test Unit 4 established that this area of the midden was intact based on the discovery of a scrapper lying flat on a surface with other flat lying burned rock near the bottom of Level 1. During excavation of Test Unit 4 at Level 3, archaeologists encountered a large cavity associated with the rodent borrows that was at least 40 cm deep and comprised at least 60 percent of Test Unit 4. The buried prehistoric cultural midden deposit evident in Shovel Test 4 during the survey had been truncated by the rodent burrow and compromised the data in this area of the project APE. In consultation with Mr. Brad Jones of THC on Feb. 14, 2013, it was decided to terminate Test Unit 4 and excavate another test unit in the northern area of the project APE and another test unit where the hearth feature was documented. Our efforts resulted in a 1x2 meter unit (Test Unit 2 and Test Unit 6). We encountered bedrock in each test unit, except Test Unit 4, within the first three 10 cm Levels. Archaeologists encountered a very high frequency of lithics and dispersed burned rock in the test units, but no evidence of bones, diagnostic artifacts, such as arrow heads, dart points or projectile points, or datable organic charcoal material.

Based on the intact hearth feature in Test Unit 2 at the southern end of the project APE, it is highly probable that other hearth features and cultural deposits are present and intact along the toe-slope outside the project APE. Because of the lack of diagnostic artifacts, bone samples, and organic charcoal samples, the wide range of cultural and scientific resources considered in the research design could not be addressed. In general, the cultural assemblage recovered from the test units was less productive than anticipated 13TAC26.21(d)(C) that would warrant mitigation.

It is GTI's Principal Investigator's opinion that the portion of 41TV2408 within AISD's Additional 2.7 Acre Access Road Project APE is not worthy for SAL designation or eligible for listing in the NRHP. The site's (41TV2408) worthiness for designation as a SAL or eligibility for listing in the NRHP outside the project APE is unknown. GTI recommends that the project may proceed as planned provided no additional acreage is required for the AISD Access Road Project. If additional land is required, AISD should consult with the THC regarding the need for further NRHP and SAL testing.

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Introduction

AISD proposed to incorporate an Additional 2.7 Acre Access Road Project with it's 2009 Bus Terminal Project and 8 acre Access Road Project (Figure 1 and Figure 2). The Additional 2.7 Acre Access Road Project crosses an unnamed tributary of Boggy Creek, which requires consideration and review by the U.S. Army Corps of Engineers (USACE). Therefore, the Additional 2.7 Acre Access Road Project is considered a federal undertaking in accordance with the National Historic Preservation Act (NHPA) [36CFR800.16(y)]. The AISD Bus Terminal Project area, which includes the 27.36 acre Bus Terminal area, the 8 acre Access Road area, and the Additional 2.7 Acre Access Road Project area, is considered the overall direct *Area of Potential Effect* (APE), in accordance with 36CFR800.16(d). The project also is under the Antiquities Code of Texas.

GTI Environmental (GTI) wrote a Short Report intended as an addendum and amendment to the draft report for the intensive archaeological survey of the Austin Independent School District (AISD) 8 Acre Access Road Project under Antiquities Permit 6214 (Iruegas 2012). The Short Report followed the *Council of Texas Archaeologists Guidelines for Cultural Resource Management Reports*. This Short Report included the archaeological survey results of the AISD Additional 2.7 Acre Access Road Project.

The Texas Historical Commission's (THC) provided a written letter dated December 20, 2013. THC's letter responded to GTI's Short-Report for the intensive archaeological survey of the Additional 2.7 Acre Access Road Project area. THC stated, "based on the results of the survey level investigations, that the portion of Site 41TV2408 mapped within the Additional 2.7 Acre Access Road Project area contains characteristics that warrant additional testing in order to determine NRHP or SAL eligibility, and the eligibility of this portion of the site remains undetermined. Therefore, if the proposed project is to proceed, either the 41TV2408 site area within the Additional 2.7 Acre Access Road Project area must be avoided and a written plan describing this avoidance must be submitted [to THC], or, if impacts to the site cannot be avoided, additional archaeological testing will need to be conducted to determine NRHP and SAL eligibility."

GTI developed a Research Design as part of its Antiquities Permit application for National Register of Historic Places (NRHP) and State Archaeological Landmark (SAL) Testing Investigations for the Austin Independent School District's (AISD) Additional 2.7 Acre Access Road Project in accordance with the Texas Antiquities Code Rules of Practice and Procedure Chapter 26.5(61) [13TAC26.5(61)].

AISD has informed GTI that avoidance of 41TV2408 site was not possible due to the required location of the access road approach and other design elements of the development plan. Accordingly, the research design included a statement of the cultural resource management and archeological research objectives of the project; a summary of the archeological theory governing its research perspective; a description of the methods

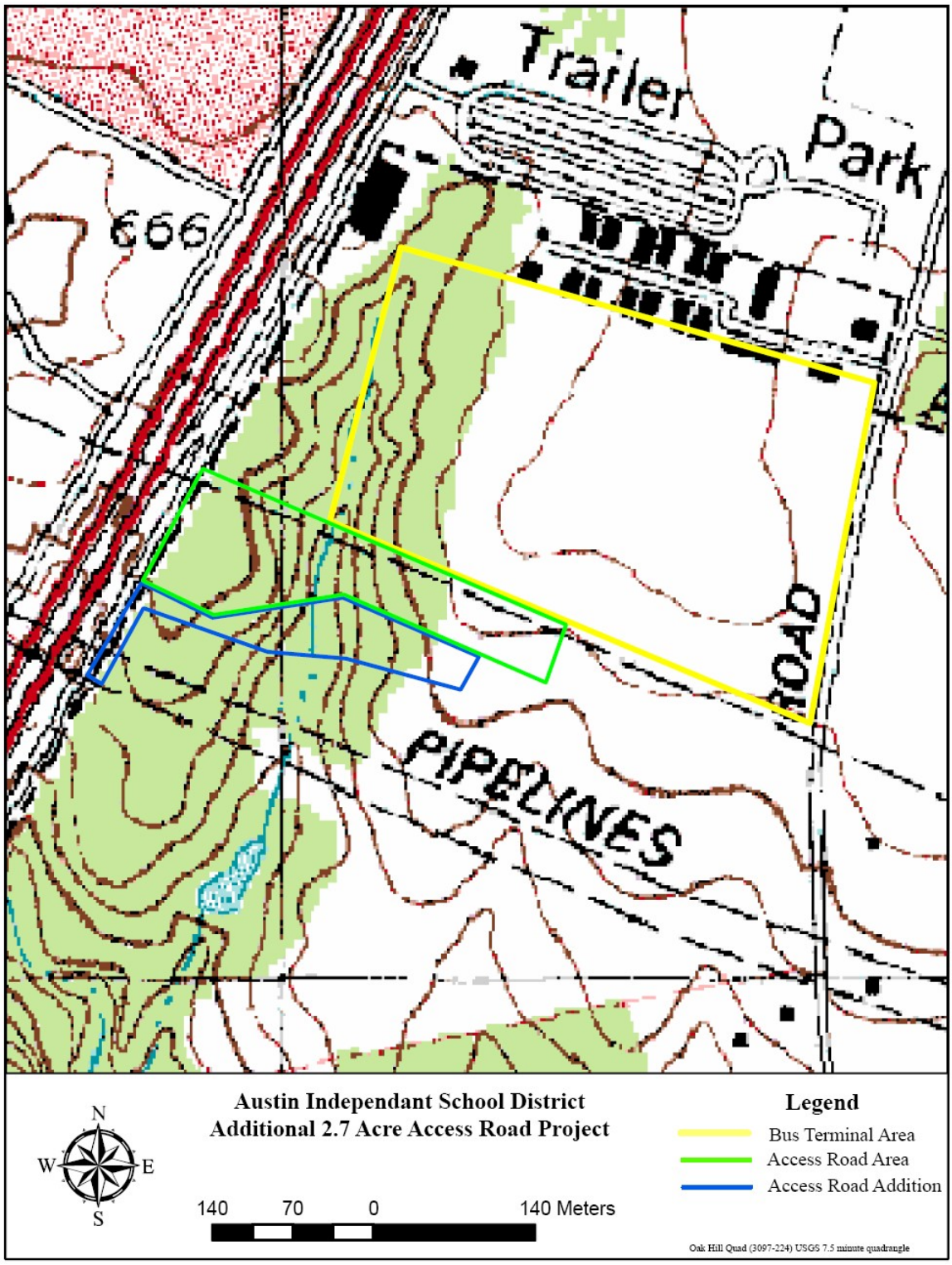

Figure 1: Topographic Map of Project Location

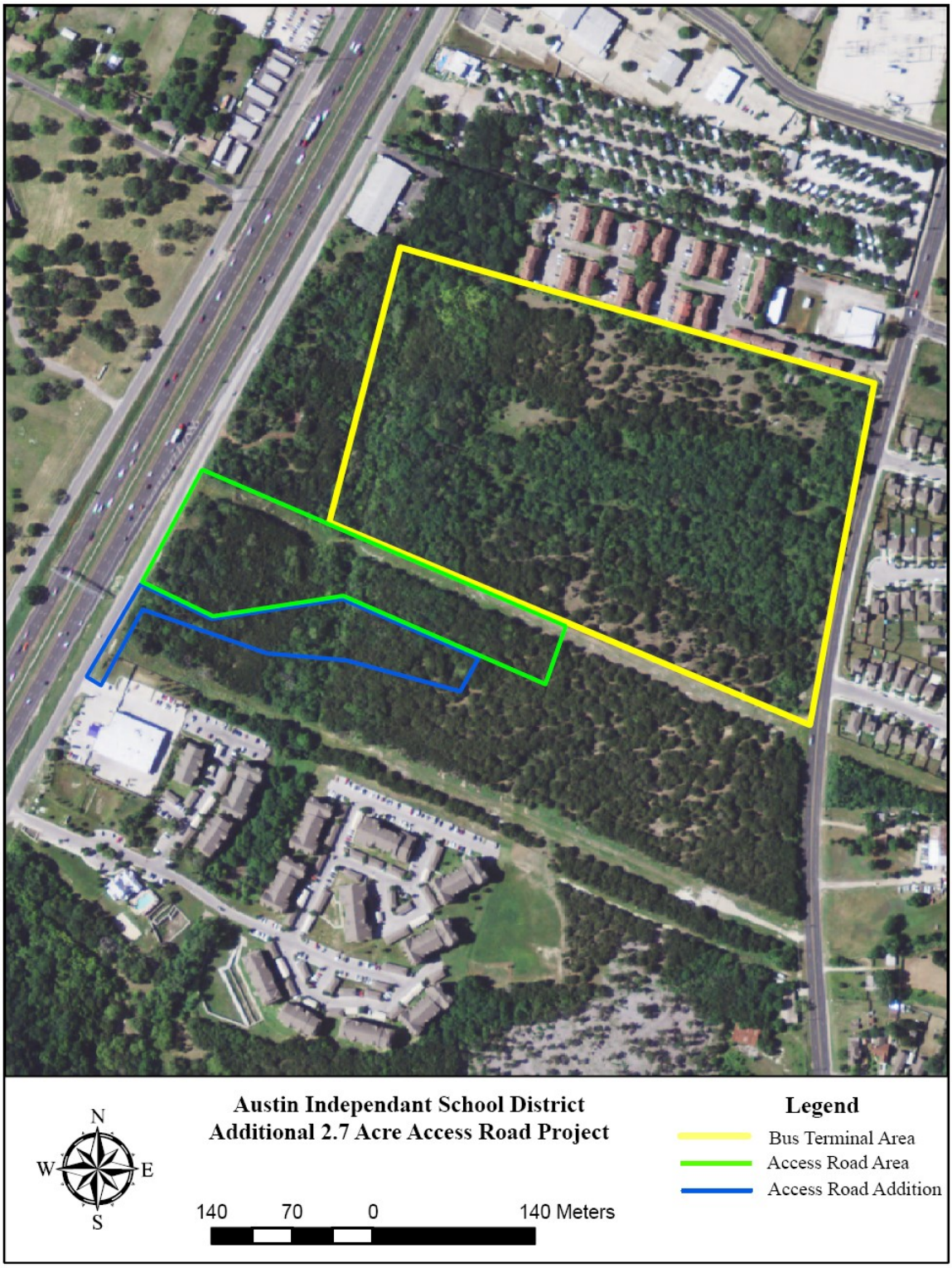

Figure 2: Aerial Map of Project Location

of data retrieval and analysis used; and a justification of those procedures in terms of the stated aims and theoretical base of the study. Any limitations encountered during the course of the project causing an amendment or partial frustration of the research design was noted in the report. The data sources exploited by the study were identified, especially where published literature and/or the files and collections of curatorial institutions have played a significant role.

The Introduction is followed by the Project Area Description chapter that provides the detailed AISD Southeast Bus Maintenance & Service Facility Site Plan. The *Area of Potential Effect* is outlined with general photos of the project APE prior to NRHP and SAL testing. The chapter includes descriptions of the project APE topography, soils, and geology.

A chapter that describes 41TV2408 Site is provided along with survey data. This chapter is included for agency reviewer convenience and as context to the proposed NRHP and SAL Test Unit locations. In particular, the site description outlines the shovel test data and where the prehistoric midden is located. Photographs of general midden location and artifacts retrieved from shovel tests are included. The proposed NRHP and SAL test unit locations are based on the shovel test data and prehistoric midden location.

The Previous Investigations chapter provides discussion of survey investigations surrounding the project APE that included National Register and State Archaeological Landmark investigations relevant to 41TV2408 with explicit reference to review of TARL files, THC or Historic Sites Atlas maps, and other utilized sources. The discussions are presented in the context of how the previous investigations apply to 41TV2408. A Literature Review subsection is provided that discusses the theoretical understanding of archaeology sites on a regional basis followed by potential research questions. A description of existing looting disturbances in the project area is discussed in the context of how it may affect identification, evaluation, or data retrieval efforts. The determination of these disturbances areas is based on site inspection.

The Research Design chapter summarizes expectations for location, type, and integrity of archaeological finds within the APE. Typically, the integrity of archaeological sites is characterized by their integrity of location design, materials, and association. This section identifies the type of work to be undertaken, conforming to one of the categories of archaeological investigation listed in 13TAC26.20. A clear statement of the methods that are employed during all phases of work follow the guidance on the preparation of appropriate research design according to 13TAC26.21(d) [Personal Communication 2012: Bill Martin November 29, 2012]. The area to be investigated is defined in the context of the APE. The research design clearly states where artifact collection is proposed and whether the land on which the work is conducted is “privately owned” or “publicly owned” or contains both privately and publicly owned. This section explicitly details the sampling intensity, test unit size and location, screen size, and sediment sample volumes. The methods are justified with reference to details of the project background information and appropriate theory demonstrating the adequacy of the methods, as well as justification explaining how the methods provide data that could address important questions of prehistory and identifies such questions. A collection

policy is specified and describes if artifacts are collected from private or public land with a written transfer of ownership to the State that includes the intended curation facility and a commitment to prepare collections for curation according to the Council of Texas Archaeologist's Standards and Guidelines for Artifact Curation.

The Results chapter provides photos that include vegetation clearing as part of field preparation for the testing investigations, Test Unit Levels, and Test Unit descriptions, along with eastern soil profile drawings. In particular, this chapter provides specific data regarding artifact retrieval from each test unit in tabular format with total number of all artifacts recovered. The individual test unit descriptions discuss the methods employed to retrieve artifact from features as opposed to general artifact collecting. This chapter also describes impediments to the investigations and courses of action taken to resolve frustrations of the investigations in consultation with AISD and THC. The Results chapter is followed by analyses chapters.

The Lithic Analysis chapter provides detailed descriptions of the lithic cultural material obtained from the test units and from any features. The data is discussed in terms of percentages of the artifacts from each test unit in the context of the total archaeology assemblage retrieved from 41TV2408. The lithic analysis includes descriptions of all lithic tools attributes with measurements in millimeters along with photos showing all lithic tools and samples of lithic debris. General summaries are provided for each test unit and how the data applies to the research questions outlined in the research design.

The Macrobotanical Analysis chapter was conducted by Dr. Phil Dering of Shumla Archeobotanical Services. Dr. Dering includes discussions of his methods, disruptive indicators, and he provides his results and conclusions.

The final chapter, Conclusions and Recommendations is a synthesis of the project in the context of the Section 106 Process and Antiquities Permit Process. General statements of AISD and THC/TX-SHPO consultation are documented as required by the Antiquities Permit Research Design. This chapter reviews the general results of the NRHP and SAL Testing Investigations, and ends with GTI's recommendations for the project.

Project Area Description

The Austin Independent School District's (AISD) Additional 2.7 Acre Access Road Project *Area of Potential Effect* (APE) is in southeastern Travis County, Texas. The AISD project APE consists of the additional 2.7 acres that is incorporated into the 8 Acre Access Road Project and 27.36 Acre Bus Terminal Project area for a total APE of 38.06 acres. The project APE is approximately 6 miles south of East William Cannon Drive east of IH-35. The project's eastern APE is adjacent to Bluff Springs Road and adjacent to IH-35 access road on the project's western boundary.

Because there was no prior federal agency involvement in the Bus Terminal Project, and the access road is for the AISD Bus Terminal Project, the 8 Acre Access Road and the Additional 2.7 Acre Access Road Project are considered part of the overall APE, in accordance with 36CFR800.16(y). For purposes of the National Register and State Archaeological Landmark Testing Project, the APE is described below in greater detail in the context of the access road, as revised, to focus agency review on the area where the intact, deeply buried, cultural deposits were present within the Additional 2.7 Acre Access Road Project area.

Area of Potential Effects

The *Area of Potential Effects* (APE) is defined to abut the limits of the existing IH-35 access road right-of-way (ROW) on the west, Bluff Springs Road ROW on the west, and property boundaries on the north and south, as shown on the AISD Southeast Bus Maintenance & Service Facility Site Plan (Figure 3). The AISD access road will have an approach on privately owned land that joins with the IH-35 access road. The AISD access road right of way will be a permanent easement held by private landowners, and the easement will not be temporary. The AISD access road traverses an east-west direction. The AISD Access Road Project APE is defined in three dimensions, including the project limits, width, acreage, and depth of impacts. Along the western AISD project APE boundary, the width of the AISD access road approach that connects to the east side of IH-35 access road is 30 feet wide. On the north side of the AISD access road, designers have planned a 6 foot wide sidewalk that will be constructed the entire length of the AISD access road; i.e. the maximum width of the access road and construction elements is 36 feet wide. The width of the easement is 50 feet. The length of the AISD access road is approximately 1200 feet long. A water quality pond is proposed 350 feet from the approach within a 100 x 100x 50 foot area; the pond will be tiered with limestone rock walls and gabion wall and sand bed. A 93 x 9 x 50 feet box culvert will be constructed 500 feet from the approach. The description of the APE identifies the maximum depth of impacts from the project, referring to project plans or to typical impacts for this class of project. AISD provided GTI with a preliminary document released for the purposes of interim review under the authority of Thomas F. Curran, Principal Engineer dated January 18, 2013. The dimensions of the AISD Access Road Project were based on this preliminary document.

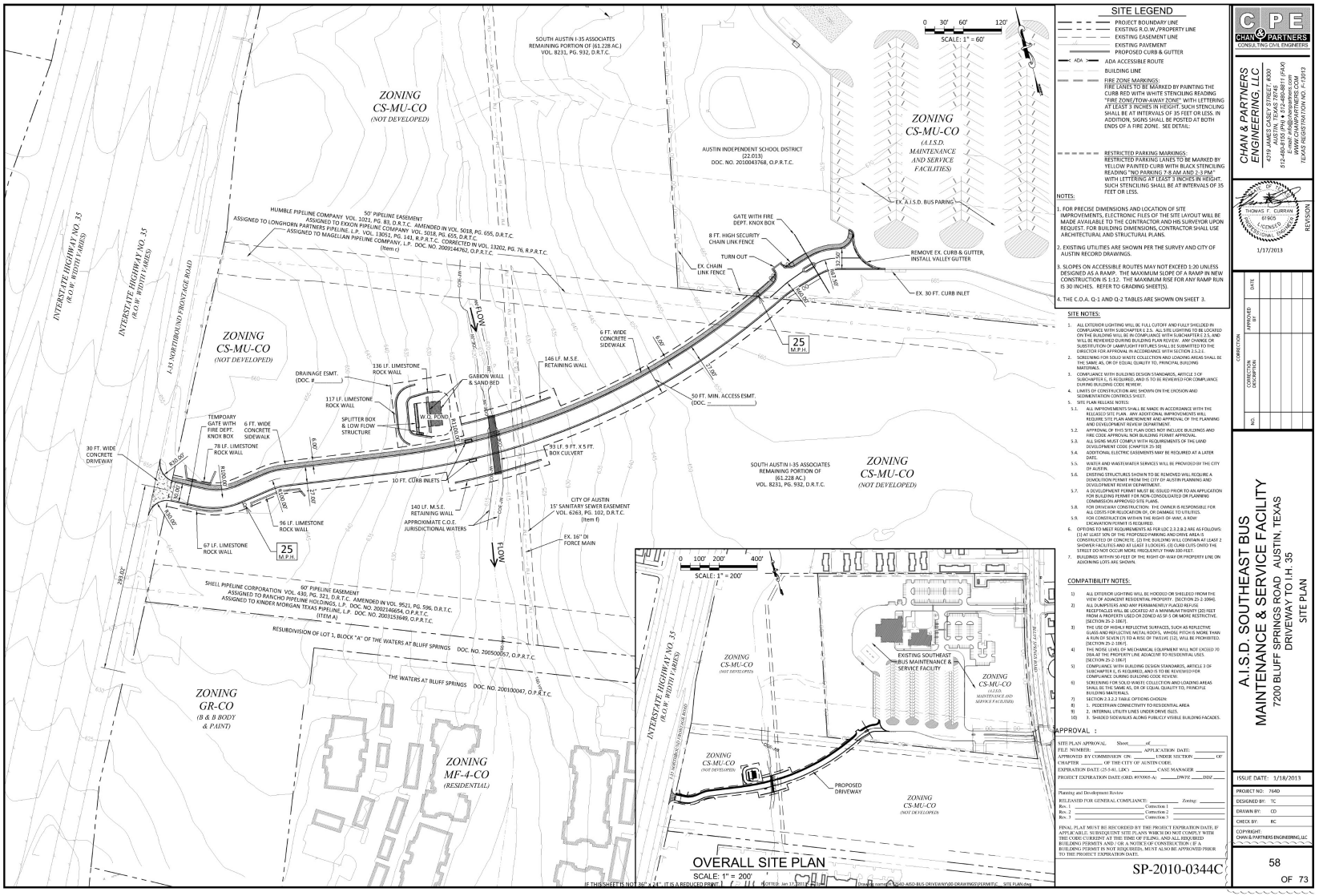

Figure 3: AISD Southeast Bus Maintenance & Service Facility Site Plan

Environmental Setting

Travis County is situated on the Edwards Plateau and is divided by the Balcones Escarpment of Central Texas (Smyrl 2012). The Colorado River flows through Travis County from the northwest to the southeast extending from the Hill Country to the Coastal Plain. It serves as the drainage system for the entire county. The Edwards Plateau region is more arid and consists primarily of juniper, mesquite and scrub brush, while the eastern part of the county contains a variety of oak, cottonwood redbud and pecan trees (Smyrl 2012). The general topography of the Project direct APE consists of gently sloping uplands terraces, toe-slopes, and steep slopes greater than 20 percent within the Boggy Creek watershed. The elevation ranges from 400 ft above sea Level to 1300 feet across Travis County. The subtropical climate of the area averages 32 inches of rainfall a year, and the growing season for the county is 270 days a year (Smyrl 2012). The general vegetation observed is a mix of short to medium grasses, green briar, oaks, hackberries, mesquite, and juniper (Figure 4 and Figure 5). Surface visibility is less than 30 percent within the Project APE (Figure 6).

Figure 4: General View of Southeast Corner of 2.7 Acre APE

Figure 5: General View of Northern 2.7 Acre APE

Figure 6: Less Than 30 Percent Ground Surface Visibility

Topography

The project area is visible on the Oak Hill Quad (3097-224) USGS 7.5 minute quadrangle, and it encompasses two upland ridges that are bisected by an unnamed tributary of Boggy Creek. The northeastern boundary of the Additional 2.7 Acre Access Road Project APE abuts the southern boundary of the previously surveyed 8 Acre Access Road Project APE. In a broader regional environmental context, 41TV2408 is situated near the southern tip of the Lampasas Cut Plain near the northern tip of the Balcones Canyonlands within the north-south strip of the Black Prairies, similar to the Wilson-Leonard Site.

Soils

Soils mapped within the Additional 2.7 Acre Access Road Project APE are classified as Austin silty clay, 3 to 6 percent sloped, moderately eroded (AsC2), Eddy gravelly loam, 3 to 6 percent slopes (EdC), and Urban land and Austin soils, 0 to 5 percent slopes (UsC) (USDA 2012) (Figure 7).

The Austin silty clay (AsC2) and the Urban Land of the Austin Soil Series (UsC) occupy 32.7 percent of the project APE. The Austin Soil Series occupy nearly Level to sloping erosional uplands (USDA 1989). There are five layers in the Austin Soil Series. The boundaries for the AsC2 are clear-smooth, gradual-smooth, and clear-irregular. The first layer is 0 to 6 inches. This layer is dark grayish-brown to very dark grayish-brown (10YR4/3 to 3/3). The structure of the first layer is very fine subangular blocky and granular. The texture of the first layer is hard, firm to crumbly, sticky and plastic. The first layer within the Austin Soil Series contains fine roots, pores, worm casts and concretions of fine calcium carbonate. The second layer of the Austin Soil Series measures 6 to 15 inches below the ground surface. The second layer is dark-brown (10YR 4/3 to 3/3). The structure, texture, and constituents of the second layer of the Austin Soil Series are the same as the first layer. The third layer of the Austin Soil Series is 15 to 27 inches below the surface. The color of the third layer of the Austin Soil Series transitions from brown to dark-brown (10YR 5/3 to 4/3). The structure and texture of the third layer of the AsC2 remains the same. The worm casts in the third layer are yellowish brown (2.5YR6/4). In addition to the fine roots, pores, and calcium carbonate concretions there are fragments of chalk. The forth layer of the Austin Soil Series measures 27 to 30 inches below the ground surface. The structure of the forth layer remains the same as the third layer. The texture is the forth layer of the Austin Soil Series is no longer crumbly. The chalk in this layer increases to approximately 30 percent and are platy fragments. The fifth layer of the Austin Soil Series measures 30 to 36 inches below the ground surface. The color of the fifth layer is white to very pale brown (10YR 8/2 to 8/4). The fifth layer is composed of platy chalk with brown silty clay in the crevices. The hardness of the chalk on the Mohs scale is three (USDA 1989).

Eddy gravelly clay loam, occupies 67.3 percent of the project APE. The Eddy Soil Series are native pasture land that are found on gentle to steep uplands slopes, and are shallow to very shallow (USDA 1989). There are three layers in the Eddy Soil Series. The boundaries of the Eddy Soil Series are abrupt-irregular and abrupt-wavy. The first

layer measures 0 to 6 inches below the ground surface. This layer is light brownish-gray to dark grayish-brown (10YR 6/2 to 4/2). The structure is strong-fine and granular. The texture of the first layer of the Eddy Soil Series is hard to firm. The constituents include fine roots and pores. The first layer also contains approximately 35 percent platy fragments of chalk. The Eddy Soil Series second layer measures 6 to 10 inches below the ground surface. The color, structure and texture remain the same as the first layer. The gravels within the second layer of the Eddy Soil Series increase significantly. The platy chalk fragments in the second layer range from 60 percent in the top of layer to 85 percent in the bottom. The third layer is comprised of Level-bedded cemented marine chalky limestone that is white (10YR8/2). The top portion of the third layer is 2 on the Mohs Hardness Scale and grades to a 3 in the lower part of the layer (USDA 1989).

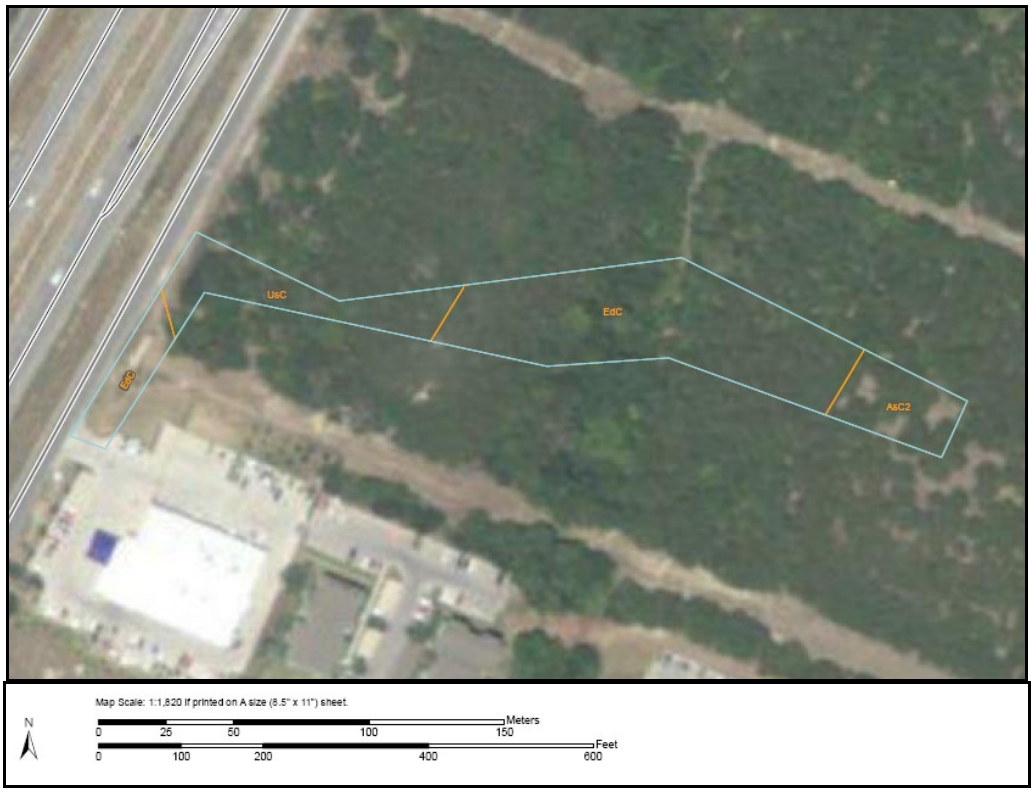

Figure 7: USDA Soils Map of Additional 2.7Acre Access Road Project APE

Geology

The Additional 2.7 Acre Access Road Project APE is situated within the Austin Chalk Formation (Kau) (Figure 8) (Bureau of Economic Geology 1981). This geologic formation is composed of chalk and marl. The chalk is formed of microgranular calcite with minor constituents of Foraminifera tests and Inoceramus prisms. The formation is 85 percent calcium carbonates. The formation is interbedded and also contains pyrite. The formation varies from 325 to 420 feet in thickness.

Kau

Austin Chalk

Chalk and marl; chalk mostly microgranular calcite with minor Foraminifera *tests and* Inoceramus *prisms, averages about 85 percent calcium carbonate, ledge forming, grayish white to white; alternates with marl, bentonitic seams locally recessive, medium gray; pyrite nodules common, weather to limonite; thickness 325-420 feet*

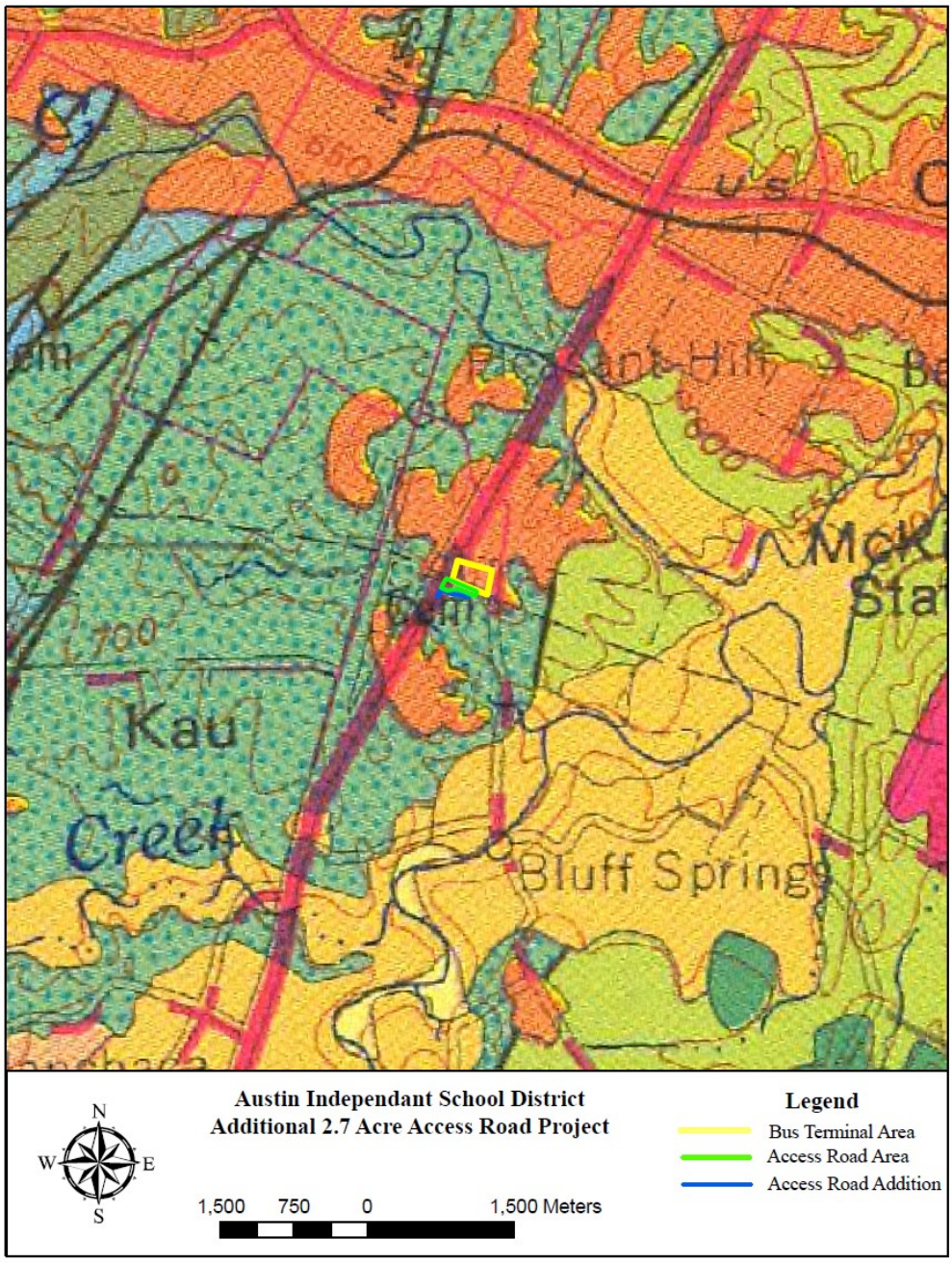

Figure 8: Geologic Map of Additional 2.7 Acre Access Road Project.

41TV2408 Site Description

A site description for 41TV2408 and synopsis of previous survey results within the project APE serves as the justification for the test unit locations. The survey shovel testing data indicates the artifact frequency, and the data provides a logical basis for detailed project planning and assessment of resource significance in accordance with 13TAC26.21(d)(2). The following survey data is provided as a context for the NRHP and SAL testing investigation results and research goals.

GTI archaeologists observed prehistoric artifacts and rabdotus shells on the surface and in shovel tests within the Additional 2.7 Acre Access Road Project APE. This evidence extended the site's (41TV2408) boundary into the 2.7 acre Project direct APE. The portion of the site that extends into the Project's direct APE is located on southern edge of a north/south upland ridge and extends onto a broad toe-slope (Figure 9). This landform is west and adjacent to the unnamed tributary of Boggy Creek. GTI archaeologists observed a concentration of artifacts centered in the vicinity of the upland terrace edge and spreading out over the broad toe-slope that included large preforms, choppers, debitage, quick use tools, burned rocks and rabdotus (Figure 10 and Figure 11). Based on the density of burned rock and associated prehistoric cultural materials and the location of these cultural materials at the edge of the upland landform, GTI archaeologist identified these deposits as a prehistoric midden (Figure 12 and Figure 13). Further inspection of this area also indicated that sometime in the past looters had excavated pits in this area looking for buried artifacts. Looter-holes were examined by GTI archaeologists (Figure 14 and Figure 15). Artifacts observed during the surface inspection indicated a number of large lithic tools such as a bifacial preform, cores, choppers quick use type tool (Figure 16 through Figure 19). Some of the tools exhibited heat alteration. Shovel tests were placed adjacent to the artifact concentrations when visible on the ground surface.

Figure 9: 41TV2408 Edge of Upland Landform

Figure 10: 41TV2408 Surface Artifacts Showing Heat Alteration

Figure 11: 41TV2408 Surface Artifacts Showing Preform and Chopper

Figure 12: 41TV2408 Prehistoric Midden Looking North

Figure 13: 41TV2408 Prehistoric Midden Looking Northeast

Figure 14: 41TV2408 Looter-Hole

Figure 15: 41TV2408 Looter-Hole Looking East

Figure 16: 41TV2408 Bifacial Preform and Core In Situ

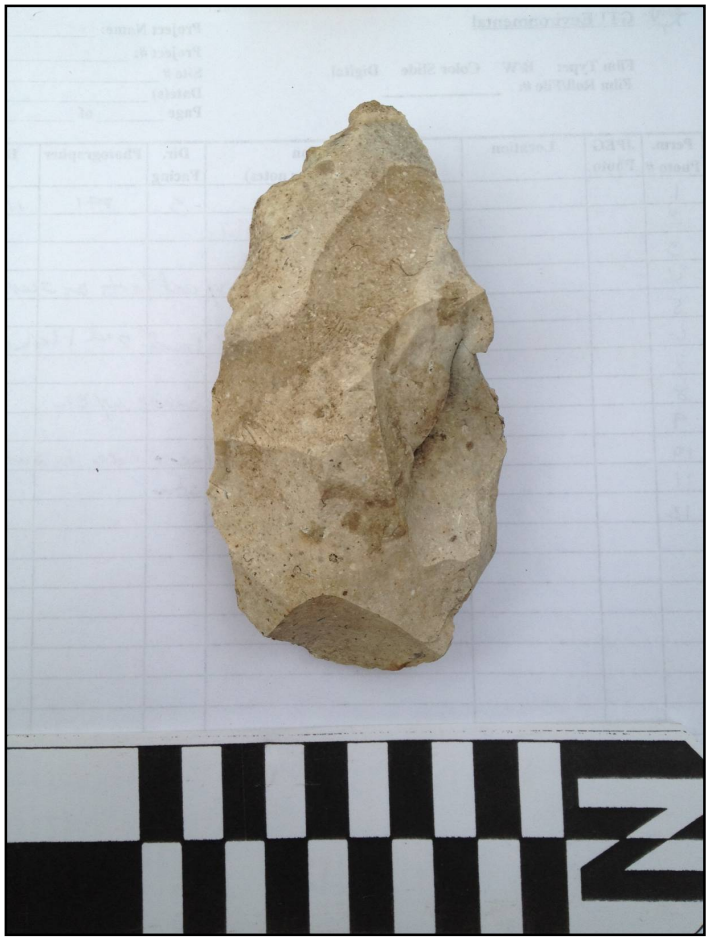

Figure 17: 41TV2408 Bifacial Preform

Figure 18: 41TV2408 Chopper with Rabdotus In Situ

Figure 19: 41TV2408 Quick Use Tool Showing Worked-Edge In Situ

The western slope like the eastern slope of the unnamed tributary of Boggy Creek is greater than twenty percent, and archaeologist observed artifacts from 41TV2408 eroding down the slope (Figure 20 and Figure 21). During the survey phase of this *Undertaking*, Shovel Test One (ST-1), ST-2, ST-3, ST-4, ST-5, ST-6 and ST-7 were excavated west of the unnamed tributary within the extended site boundary of 41TV2408. Shovel Tests Three, ST-6 and ST-7 were negative for cultural materials, and ST-1, ST-2, ST-4 and ST-5 were positive. Shovel Test One, ST-2 and ST-3 were excavated in the area closest to the access road of IH-35. Shovel Test Four and ST-5 are located on the southern end of the upland ridge within the area of the prehistoric midden. Shovel Test Six and ST-7 were located at the top edge of the slope of the unnamed tributary of Boggy Creek that was greater than 20 percent.

Figure 20: 41TV2408 Western Slope Greater Than 20 Percent

Figure 21: 41TV2408 Eroding Artifacts on Slope Greater Than 20 Percent

Shovel Test One and ST-2 both contained similar soil profiles that were brown silty loam, and they were primarily composed of humus. Shovel Test One extended 14 cm below the ground surface and ST-2 was excavated to 15cm below ground surface (Figure 22 and Figure 23). Both of these shovel tests were terminated at limestone

bedrock. A single secondary flake was documented in Level one of both ST-1 and ST-2 (Figure 24 and Figure 25). Shovel Test Three contained two layers (Figure 26). The upper layer extended to 15 cm below ground surface and was brown silty loam the same as ST-1 and ST-2. The second layer of ST-3 was described as tan clayey silty with chalk and marl. This shovel test was excavated to 36 cm below ground surface and was negative for cultural materials. Shovel Test Four and ST-5 were excavated in the prehistoric midden area with the highest concentration of artifacts. Shovel Test Four was excavated to a depth of 50 cm below ground surface before it was terminated, and it contained prehistoric cultural materials throughout the soil profile down to 50 cm (Figure 27). Excavation below 50cm was physically not possible as the archaeologist was on knees and impaired by dense vegetation. Clear cutting was neither an option, nor advisable within the intact midden deposit area. The soil profile for ST-4 contained the brown silty loam from 0 to 31 cm below ground surface. The second layer, 31 to 47 cm below ground surface, transitioned to a brown silty loam with marl, burned rock and rabdotus. The third layer within the soil profile of ST-4 extended from 47 to 50cm below ground surface, and it was light brown silty loam and also contained marl, burned rock and rabdotus. A single secondary flake was recovered from ST-4, Level 1 and Level 2 (Figure 28 and Figure 29). Level 3 of ST-4 contained a single secondary flake and a tertiary flake (Figure 30). The highest density of artifacts within ST-4 occurred in Level 4 which produced three secondary flakes, and 1 tertiary flake (Figure 31). Level 5 of ST-4 contained one secondary flake and one tertiary flake (Figure 32).

Figure 22: 41TV2408, Shovel Test 1 Soil Profile

Figure 23: 41TV2408, Shovel Test 2 Soil Profile

Figure 24: 41TV2408, Shovel Test 1, Level 1 Artifact

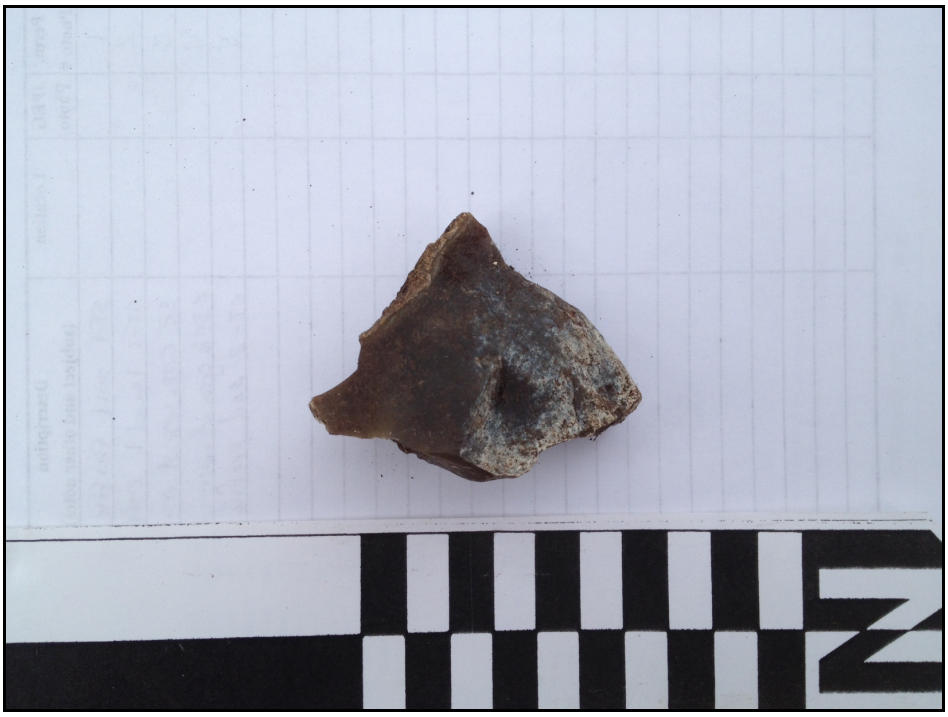

Figure 25: 41TV2408, Shovel Test 2, Level 1 Artifact

Figure 26: 41TV2408, Shovel Test 3 Soil Profile

Figure 27: 41TV2408, Shovel Test 4 Soil Profile

Figure 28: 41TV2408, Shovel Test 4, Level 1 Artifact

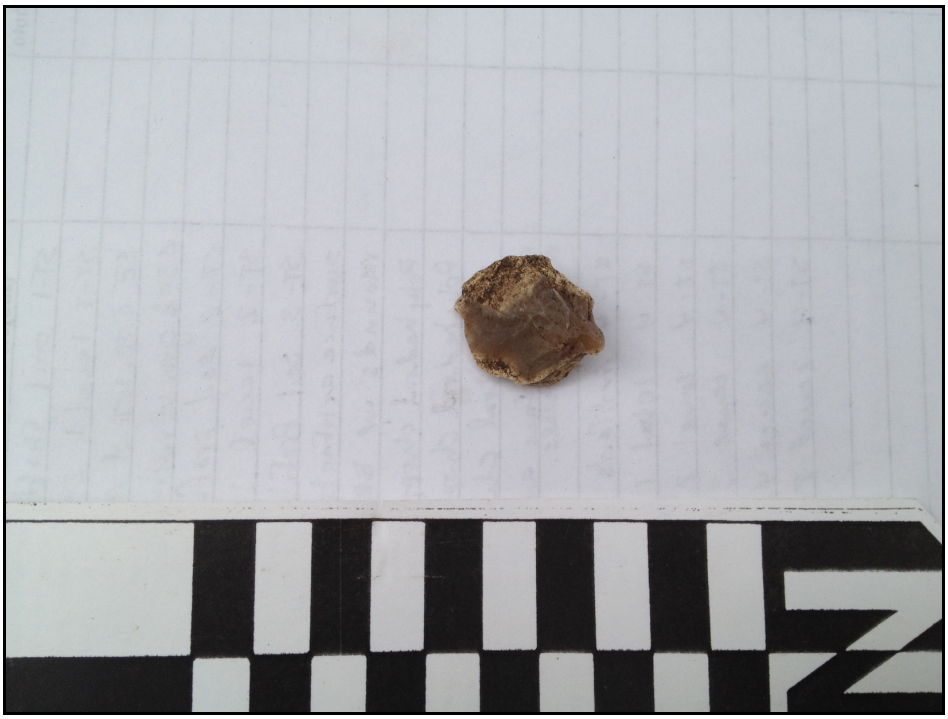

Figure 29: 41TV2408, Shovel Test 4, Level 2 Artifact

Figure 30: 41TV2408, Shovel Test 4, Level 3 Artifacts

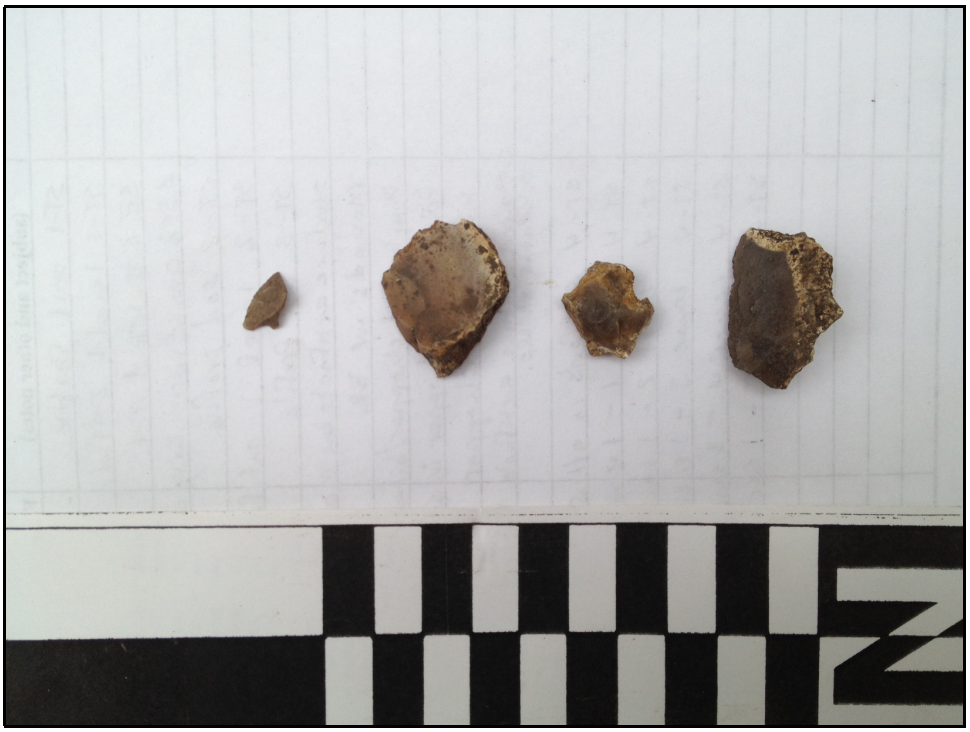

Figure 31: 41TV2408, Shovel Test 4, Level 4 Artifacts

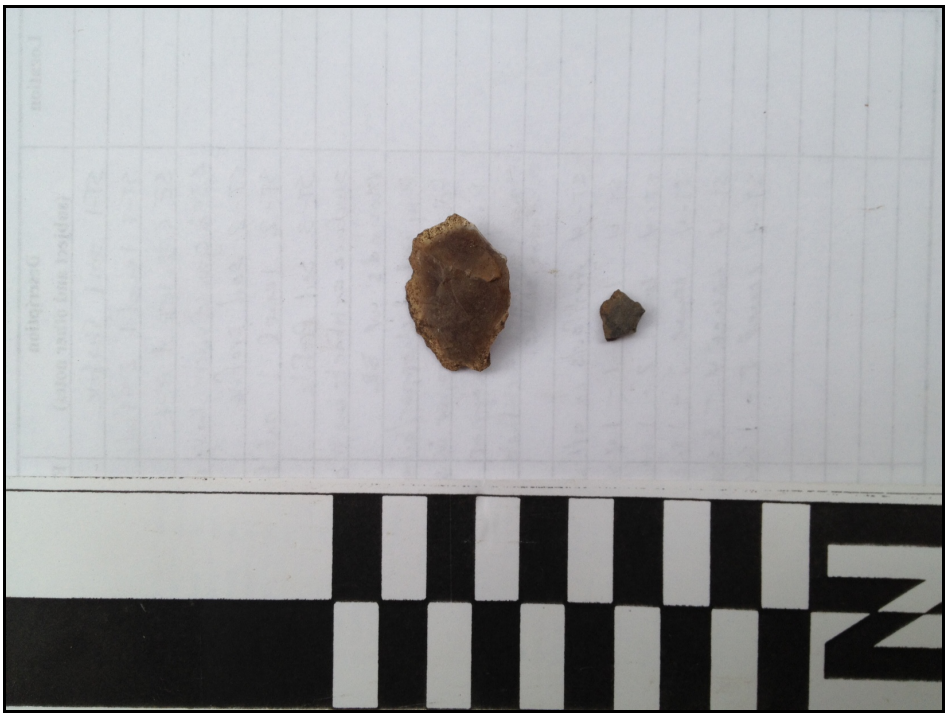

Figure 32: 41TV2408, Shovel Test, Level 5 Artifacts

Shovel Test Five was also positive with buried cultural material, and it was excavated to a depth of 29 cm below ground surface terminating at limestone bedrock (Figure 33). This shovel test contained a single layer of brown silty loam. One secondary flake, one tertiary flake and three rabdotus shells were recovered from ST-5, Level 1

(Figure 34). Shovel Test Five, Level 2 contained two secondary flakes and three tertiary flakes (Figure 35). Lastly, ST-5, Level 3 contained one secondary flake, three tertiary flakes and two rabdotus shells (Figure 36). Shovel Test Six and ST-7 were negative for cultural materials. They had similar soil profiles compared to ST-5 described as brown silty loam that extended to 14 and 8 cm below ground surface consecutively (Figure 37 and Figure 38). The bedrock in these two shovel test, however, was unconsolidated limestone. GTI archaeologist excavated ST-6 and ST-7 into the unconsolidated bedrock to 28 and 27 cm below ground surface consecutively.

Based on the distribution and types of artifacts documented at site 41TV2408 during the March 2012 survey, the archaeological resource was recorded as a lithic procurement site. During the November 2012 investigation of the Additional 2.7 Acre Access Road Project APE, archaeologists were able to document the site further, and they encountered an intact prehistoric midden. Shovel testing within the midden area demonstrated that the midden deposits have stratigraphic integrity. The frequency of buried, stratified, and intact cultural materials within the midden area increased with depth as demonstrated in ST-4. The second layer of ST-4, 31 to 47 cm below ground surface, transitioned to a brown silty loam with marl, burned rock, rabdotus, and the highest concentration of artifact. Archeologists noted higher artifact concentrations on the ground surface and buried within the soil profile on the broad toe-slope area adjacent to the midden at the upland terrace edge as seen in ST-5. Archaeologist also documented midden looter-holes excavated at site 41TV2408 searching for buried artifacts.

Figure 33: 41TV2408, Shovel Test 5 Soil Profile

Figure 34: 41TV2408, Shovel Test 5, Level 1 Artifacts

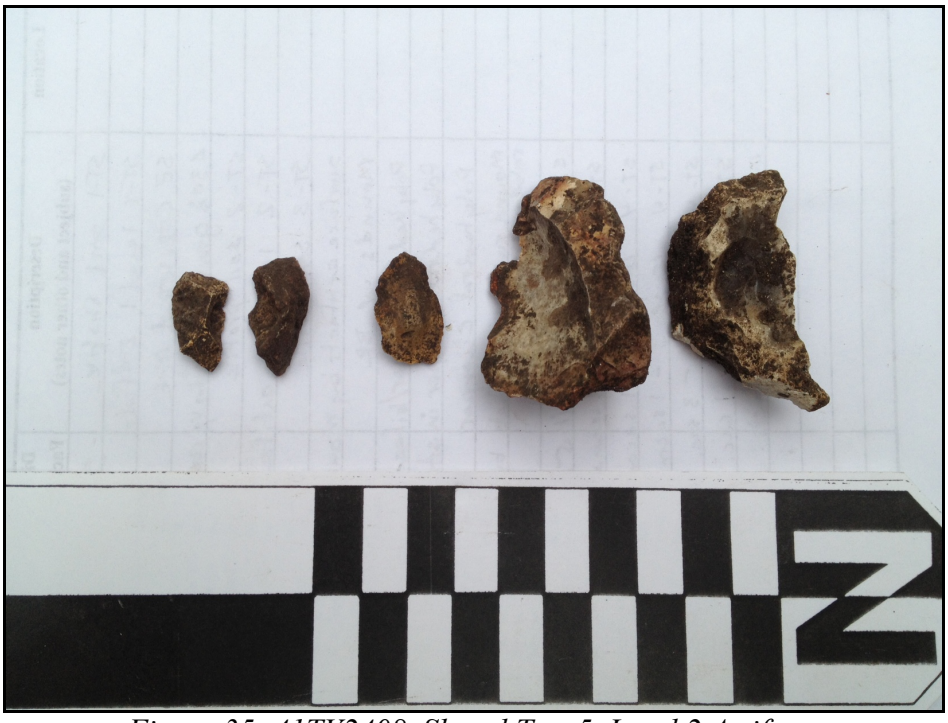

Figure 35: 41TV2408, Shovel Test 5, Level 2 Artifacts

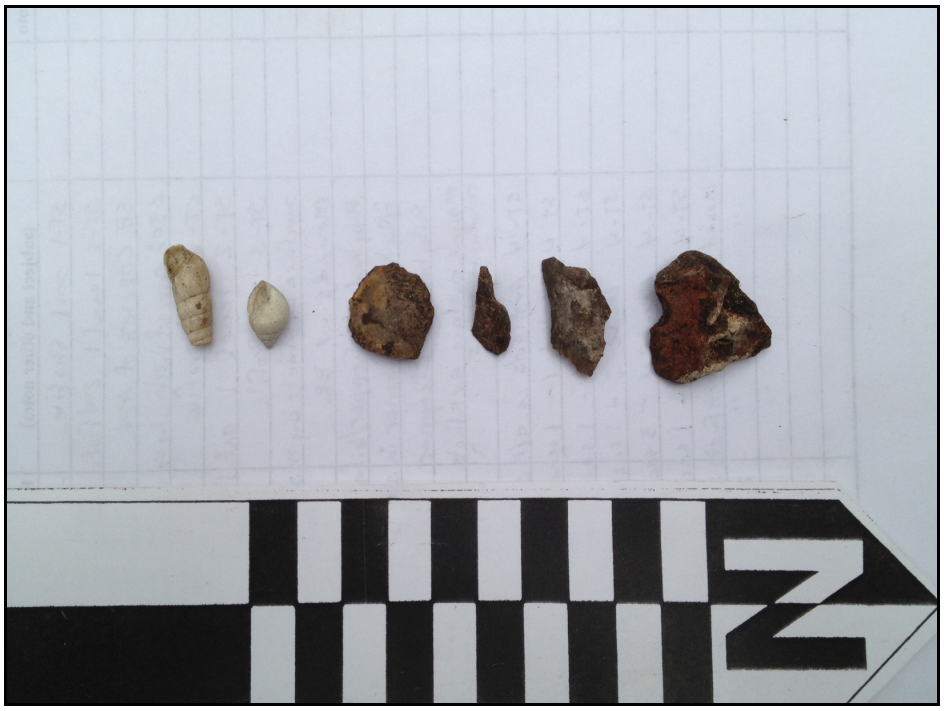

Figure 36: 41TV2408, Shovel Test 5, Level 3 Artifacts

Figure 37: 41TV2408, Shovel Test 6 Soil Profile

Figure 38: 41TV2408, Shovel Test 7 Soil Profile

Previous Investigations

Initial review of the Texas Historical Commission's Atlas Database during the survey phases of this federal undertaking determined that the property was surrounded by previous cultural resource surveys where archaeological sites have been identified. The State Department of Highways and Public Transportation (now TxDOT) conducted a surface survey in February 1986 west and adjacent to the proposed project location. Site 41TV358 was documented in 1977 southwest of the project location on an open terrace with a possible Clovis point and Meserve point, 1 dart point, cores, bifaces, and flakes. Site 41TV365 was documented in 1978. It is a quarry site located on a knoll east of the project area that contained bifaces, cores, and debitage. Since then, 41TV1614 has been recorded in the general vicinity in February 1993 and described as a looted open campsite containing Archaic dart points, an obsidian flake, debitage, cores, preforms, bone, manos, and burned rock with some parts of the site retaining its integrity. In 1994 another site, 41TV683 was revisited just south of the project area and further documented as a lithic procurement site containing bifaces, cores, utilized flakes, hammer stones, burned rock, and debitage. North of the project area, 41TV681 was documented first documented in 1983 as a single story limestone house, and then again as a historic site being sold by the Resolution Trust in 1992. The Lower Colorado River Authority conducted a linear survey east of the project area and documented three lithic procurement sites, 41TV1824, 41TV1825, and 41TV1827, as well as 41TV1826 described as a historic house mound with dressed limestone. In 2009 and 2012, archaeologists recorded 41TV2331 and 41TV2408, respectively, as part of the AISD's Bus Terminal and Access Road Projects. 41TV2331 was documented as a multi-component historic and prehistoric site. In 2012, archaeologists documented 41TV2408. The sites boundaries of each site extended further south into the additional project direct APE. It was noted that 41TV2408 was situated on the same broad toe-slope as 41TV358 with the possible Paleoindian component. It was noted that it was not possible to determine if both of these sites were one and the same, because they were separated by a gas line easement right-of-way and development that is outside the project APE.

Previous National Register and State Archaeological Landmark investigations include: Wilson-Leonard Site 41WM235 (Paleoindian through Late Prehistoric), Helton San Antonio River Nature Park Site 41WN120 (Early Archaic), SH 130 Site 41TV2162 (Late Early Archaic).

Wilson-Leonard Site 41WM235

The Wilson-Leonard Site represented the archaeological record of Central Texas by possessing temporally diagnostic artifact types of Central Texas, a variety of features, multiple burned rock middens with biotic and abiotic evidence for changing environmental conditions over time (Collins et al. 1998: 55). The site was discovered in 1973 and initial National Register Testing took place in 1981–1998 and later Mitigation in 1991–1998. Collins (1998: 55–68), offers an adroit synthesis of the archaeological treatment of Central Texas in the context of broad continental cultural history perspective. In particular, he emphasizes the paradigm shift from Hunting and Gathering

("Food-Getting") to Agriculture, ("Food-Producing"). While Collins references Gordon Willey's perspective that Central Texas inhabitants were just a few days walk from food-producing cultural groups, Collins states: "[t]here is nothing inherent in the site's, climate, or other natural conditions to preclude the growing of crops." He posits the question further: why did not the Central Texas inhabitants use food-production knowledge, or if they tried and failed, why did they revert back to food-getting strategies? Collins notes that 41TV235 site makes proportionally greater contributions to regional Paleoindian and Early Archaic sites and adds important information to the Middle and Late Archaic record.

Helton San Antonio River Nature Park Site 41WN120

In 2011, the Center for Archaeological Research (CAR) of the University of Texas at San Antonio (UTSA) conducted limited eligibility testing at 41WN120. The site was previously identified during a 2010 intense pedestrian archaeological survey of the proposed Helton San Antonio River Nature Park located near Floresville, in Wilson County, Texas (Munoz 2010). The site consists of two broad temporal components. The upper component produced one temporally diagnostic artifact, a Marcos point, dating the component to the Late Archaic period. The lower component contained three diagnostics, an Early Triangular point, an Angostura point, and a Guadalupe tool, associating the component with the Early Archaic period. One radiocarbon date, obtained from a piece of isolated charcoal in the upper portion of the lower component confirmed this time designation. No features were encountered but burned rock was collected from the components suggesting the presence of buried thermal features. A detailed debitage and tool analysis suggests that the excavated lithic material from the lower component represents late stage reduction focusing on tool production. The high density of cultural materials, burned rock suggesting buried thermal features, intact sediments, diagnostic artifacts in good context in conjunction with a radiocarbon date, and the depth of buried prehistoric material suggest that the southwest portion of 41WN120, near the bluff, was eligible for listing in the NRHP and as a SAL (Munoz 2011).

SH 130 Site 41TV2162

In April and May of 2006, Hicks & Company conducted National Register of Historic Places eligibility testing of site 41TV2162 within the Additional Properties of the proposed SH 130. Site 41TV2162 is located at the base of an upland slope on the edge of the Onion Creek floodplain. A total of 15.7 cubic meters of site sediments was excavated by hand and 6,890 cubic meters of site sediments were machine excavated. Cultural material collected or recorded from the site included one hearth feature, 325 lithics, six stone tools, five bone fragments, 215 mussel shell fragments (446.5 g), 1047 fossil mollusk fragments (2.10 kg), and 4869 fragments of burned rock (26.87 kg). Dates from radiocarbon samples collected from within the hearth feature consistently fall within the 2-sigma calibrated period ranging from 6650-6310 B.P., with all samples overlapping at 6410 B.P. This date places the site at the latter end of the Early Archaic. As a result of the testing at 41TV2162, the investigators concluded that the portions of Site 41TV2162 within the Additional Properties of the proposed SH 130 are not eligible for listing in the NRHP and a SAL. This was based on the lack of significant numbers of intact features,

poor organic preservation, a lack of in situ diagnostic artifacts, and the low density of cultural material across the site (Campbell, et al. 2008).

Literature Review

The AISD Additional 2.7 Acre Access Road Project and 41TV2408 site is located in what Black (1989: 39–40) and Hester (1995: 427) refer to as the Rio Grande Plain of South Texas within the Blackland Prairie. Both scholars have proffered research-related issues for consideration. In particular, Black (1989: 57-61) proposed chronology, subsistence, environmental reconstruction, transition between Paleoindian and Early Archaic, and lithic technology and function as research topics. Hester (1995: 429, 450-451) offered similar research topics related to climatic change, subsistence, settlement, and behavior change. Since Black's (1989) synthesis of South Texas Rio Grande Plain archeology, Hester (1995: 430-433) has synthesized further the types of sites as Open Camp Sites, Lithic Reduction Sites, Temporary Camp Sites, Deep Stratified Open Camp Sites, and Cemetery Sites. The 41TV2408 site represents an opportunity to test both Black and Hester proposed research questions. Based on the possible Paleoindian Clovis point and Late Paleoindian Meserve point documented at 41TV358 site southwest of the project location on the terminal end of the same toe-slope upland terrace as 41TV2408, it is probable that similar cultural material may be present at 41TV2408. Accordingly, the potential research question related to the transition between Paleoindian and Early Archaic is also a probability, in particular, among the other proposed research questions.

A review of the archeological literature provides an understanding regarding the need for certain archeological evidence, analyses, and research questions that could be asked and answered. Hester (1995: 427) notes a difference between "High Density" and "Low Density" sites, and that each site "manifests different archeological records." He also says there are a need for a better understanding of ancient cultures in the Rio Grande Plain as well as a need to look at climatic change, shifts in resources, and focus on the spread of horizons, ethnic groups, or phases (Hester 1995: 450). With respect to climatic change, phytolithic research can demonstrate evidence of tall grass versus short grass environments over time that can lead to the conclusion of wet or dry environmental episodes over time. Regarding chronology, soil humate dates can be very effective in conjunction with organic or charcoal dates in good context. Black (1989) also points out that lithic analyses can be an effective dating method. Faunal remains as well as floral remains are needed. Floral remains can also be radiocarbon-dated. Invertebrate faunal studies, however, can provide evidence of annual growth rings of *Rangia cuneata* to determine occupational seasonality cycles. Stable Isotope Analysis of faunal remains can also reveal evidence of environmental reconstruction by determining what types of plants were eaten by the animals whose faunal remains are studied. Hester (1995: 428) notes that among the clearing of land in the historic period and subsequent spread of mesquite, the movement of stream channels through time "has been a long term environmental change." Geomorphology studies are essential to a better understanding of landform development and how they change over time. Black (1989: 59-60) has noted a dearth of information in the archeological record prior to 3500 B.C., and he has stated that research is needed at sites that date between 3500 and 2500 B.C.; i.e., between 5500 and 4500

B.P. Hester (1995: 451) points out the need for "well excavated, stratified sites and more chronometric dates for associated cultural and ecological remain," as well as the importance of archeological data that can be obtained from the other archeological site types.

Open Camp Sites are characterized as long, narrow strips of land where clusters of artifacts and cultural features can be found on the ground surface or ancient ground surfaces. The cultural materials can represent different time periods over a horizontal area and rarely overlap. Hester (1995: 430) notes that sites from different time periods can be characterized as Open Camp Site, and Late Prehistoric sites of this nature are typically dense concentrations with features, faunal remains, and artifacts. Moreover, he describes intra-site features as "occupation zones." Based on his excavation experience, Hester suggests that larger open block excavations be conducted after geomorphological analyses and test excavations demonstrate the need for data recovery. A prerequisite for recommendations of data recovery will be that test Level excavations should determine if datable cultural features are present. In the absence of intact cultural features and datable materials, test Level investigation reporting can theoretically concentrate on assessing the limited information that is available, thereby exhausting research potential at the test Level investigations.

Lithic Procurement Sites are typically located on terraces and evidenced by tested cobbles, debitage, and bifaces left behind during reduction phases. Hester notes that even these types of sites can be important avenues of information by documenting surface concentrations in an attempt to determine if there are lithic reduction sequences among the occupation zones within the sites. The prehistoric inhabitants occupied these site types long enough to determine if the raw materials were desirable, and only then would they have returned for limited duration to obtain more raw materials.

Temporary Camp Sites, however, were short-term encampments of longer duration in the uplands and high terraces. These sites are characterized as having few hearths, scattered burned rocks, flakes, and rarely having diagnostic materials.

Deeply Stratified Open Camp Sites more often reveal evidence of intra-site activities, such as lithic reduction sequences combined with mussel shell and fish remains. These sites also have large well-preserved hearths with datable charcoal and samples for wood species identification. Hester (1995: 431) notes that these types of sites have been discovered at the mouths of major creeks draining into major streams or rivers.

Cemetery Sites typically have large numbers of burials with associated funerary objects. These types of sites were thought to be few and far between (Black 1989) when limited archeological investigations were available for synthesis.

Potential Research Questions

Collins (1998: 56) notes, "There is a great need for more concerted effort toward the discovery and thorough investigation of gisements, sites with archaeological components sealed in natural deposits." Intensive archaeological survey of the AISD

Additional 2.7 Acre Access Road Project site, 41TV2408, indicates a sealed 16 cm buried component with burned rock, rabdotus, and lithic cultural material within a midden context. GTI's Principal Investigator (PI), Sergio A. Iruegas, RPA, proposes that C14 datable organic material, macrobotanical material, and faunal material, must be present within the context of buried cultural feature deposits with diagnostic lithic artifacts if 41TV2408 is to be eligible for listing in the NRHP and as a SAL. Consistent with more recent research goals, GTI PI will focus on data related to plant foods, seasonality, perishable material culture, site types, cooking technology, and housing, as well as, report on the durable material culture of chipped and ground stone and production methods. A broad range of research questions are proposed for the NRHP and SAL investigations. Collins points out that the majority of the information archaeologists have used to define "Central Texas" as a regional area has come from the Balcones Canyon Lands and the southern parts of the Lampasas Cut Plain. Accordingly, GTI's PI follows Collin's and other colleagues "trend in research…away from broad archaeological area concepts and towards sets of environmental units of varying character considered relevant to the problems being addressed" (Collins 1998: 57).

Chronology

The opportunity for National Register eligibility testing to contribute to chronology as a research question is manifest in the context of Black's (1989: 57-58) assessment of current major problems in chronology data in the Rio Grande Plain. Quigg (et al. 2000: 229) noted that the "temporal differences in the age of Tortugas points between the Falcon Reservoir and Choke Canyon area is a fascinating issue that requires further investigations." His emphasis was based on Black's (1989: 58) call for further research regarding a Tortuga/Matamoros point continuum during the Archaic Period. Taylor and Highley (1995) documented a Tortuga/Matamoros continuum based on 122 points found in human burials that date between 2400 and 2800 B.P. Decker et al. (2000: 301) has raised the question of whether burned rock middens began forming in Early Archaic times in the Western Balcones Canyonlands, and notes that "large oven features were used by 8400 B.P. and that sotol or yucca was being baked by 8000 B.P." Collins' abbreviated chronology of the Paleoindian Period is outlined with subperiods of Pre-Clovis, Early and Late and characterized with style intervals with Clovis, Folsom, Plainview, Dalton and San Patrice in the Early subperiod at the Wilson-Leonard Site. The location of 41TV2408 is consistent with where Collins points out that Paleoindian sites are found—"near the base deposits that began aggrading on bedrock in stream valleys at the waning of the Clovis drought (Collins 1998: 62). The 16 cm culture material deposit just above bedrock at 41TV2408 has the potential to provide answers to chronology related issued of the transition from Paleoindian to Early Archaic or later period, as well as address environmental reconstruction and climatic change based on analyses of organic samples, if present.

Environmental Reconstruction/ Climatic Change

Thoms's (1989: 139) research points out the importance of paleoclimate reconstruction and site setting as he notes that all the species of *Camassia scilloides* (also referred to as wild hyacinth) grow in open areas exposed to full sunlight (typically

woodlands, prairies, and meadows, especially wet meadows). As Decker's et al. (2000: 19-40) research at the Woodrow Heard Site (41UV88) indicates, the end of the Late Pleistocene was cooler and wetter than today. Numerous unnamed tributaries of Boggy Creek have been present within the drainage basin into the Colorado River over time. The importance of thorough geomorphological assessment of the site setting is imperative for a better understanding of the archeological record. Quigg's (et al. 2000: 297) assessment of the effectiveness of data recovery at the Lino Site was that backhoe trenching should be conducted with geomorphology to investigate features in exposed side walls and determine location and number of occupation zones. The depth of the soils at 41TV2408, however, does not warrant backhoe trenching and geomorphological analysis is not a major focus of the NRHP and SAL test investigations. The types of preserved floral (and faunal) remains that may be encountered within the deposits of these sites may also lend themselves toward the reconstruction of the paleo-climate and available plant and animal resources present at the time of the site occupations. Decker et al. (2000: 40) calls for the development of an extensive database of multiple proxy records of well-dated and analyzed samples that can provide evidence of major and minor climatic changes during the Holocene, and these examples should be compiled across the state to identify the resources available to human populations, which can demonstrate responses to climatic change.

Subsistence

Phil Dering (1999; 2003) has made advances in resource exploitation research regarding the identification of preserved plant remains from archeological sites in the Trans Pecos (41ED24), South Texas, and Central Texas. He has reported on the reexamination of preserved floral remains from several Central Texas and Trans Pecos sites and documented the remains of sotol and yucca and a previously overlooked resource, Eastern camas bulbs from sites in Central Texas. In particular, Dering (2003) has identified the remains of charred bulbs (camas or onion) from the Block House Creek sites, Wilson-Leonard site, and the Horn Shelter site in Central Texas, and the Hinds Cave, Bonfire Shelter, Arenosa Shelter, Baker Cave, and the Devil's Mouth Site in Trans Pecos. These sites, in addition to an Early Archaic occupation at 41CW54 (Schroeder and Oksanen 2002) and sites at Camp Bowie (Mauldin et al. 2003), suggest that camas was a resource that had been exploited as early as the Early Archaic (Wilson-Leonard) through the Late Prehistoric period (Horn Shelter). Dering's reassessment of this archeological feature documents firm evidence of camas exploitation. Decker et al. (2000: 301) noted a personal communication with Dering that Late Paleoindian Angostura lithic material and charred sotol or yucca leaf bases at the Woodrow Heard Site (41UV88) show that "Angostura peoples were already exploiting upland plant species that require specialized and labor-intensive processing techniques and that yield relatively few calories per unit of labor." Quigg (et al. 2000: 245-252) point out that inhabitants at the Lino Site used sandstone for boiling geophytes, and ponder why sandstone was used as opposed to other rock types. Accordingly, one of the primary subsistence research avenues will be to address the possibility of camas exploitation at 41TV2408, and the degree of importance camas served in the local aboriginal diet, as well as what types of cooking features resulted from the processing of camus bulbs or similar geophytes that require prolonged cooking in order to convert starch to sugar for digestion.

Settlement

Increase or reduction in mobility patterns during the Archaic Period has been a large part of the archeological literature debate. We know that early Paleoindian inhabitants were mobile hunters, but at what time between the transition into the Archaic Period and into the Late Prehistoric Period did people begin to become less mobile to the point of semi-sedentism in Central Texas. Models have been proposed for the factors that caused ancient people to be less mobile, particularly distance from water resources. Dering (1999:659-674) has studied earth-oven plant processing at sites within the Trans Pecos Region and concluded that "depletion of local resources, not the distribution of water sources, governed residential mobility." Tate-Iruegas (2004) has noted that chenopodium and amaranth potentially were processed in earth-ovens discovered at the Holt Site. Ethnoarchaeological evidence indicates that the Aztec used amaranth in their diet, as a ceremonial red dye, and for their blood ceremonies (Tull 1985:32). In her comparison of Archaic Period sites, chenopodium and amaranth have a higher nutritional output than sotol. If camas was overlooked in central Texas, could chenopodium and amaranth also be overlooked in Central Texas at other sites?

Behavior Change/Transition between Paleoindian and Early Archaic

Loma Sandia is an excellent example of a large burial ground where prehistoric peoples intentionally buried funerary objects, and where archeologists have been able to postulate behavior changes and the transition between early hunter-gathers and later emergence of population density, exchange systems, and *fixed territories*. Hall's (1995:633-647) main premise for the development of Loma Sandia was territorial formation brought about by fundamental behavior and adaptive strategies. Decker et al. (2000: 301) noted that Early Archaic occupation at the Woodrow Heard Site (41UV88) was a time of increased occupational intensity in the Western Balcones Canyonlands. Hall (1995: 634) also noted that increased population densities and "resource competition between groups necessitated the establishment of *fixed territories*." A critical component of this premise was areas of *superabundant natural food resources* that supported greater densities of prehistoric peoples than did adjacent regions without this type of resource Excavations at Loma Sandia cemetery have provided firm evidence for the cultural and economic connections with the Rio Grande Plain peoples. The authors of the report note that "a study of resource zone on the Texas Central Coastal Plain, in conjunction with the prickly pear fields in southern Texas, may open the way for further consideration of a modified concept of the *Gilmore Corridor* (Krieger 1948; Mason 1935) on the Texas Coastal Plain" (Taylor and Highley 1995: 646-647). Their hypothesized ebb and flow of cultural contacts between vast regions of Texas Archaic inhabitants was based on the occurrence of various distinctive artifact types and materials in the Loma Sandia graves.

Lithic Technology and Function

Decker et al. (2000: 291-307) noted that the Woodrow Heard Site's (41UV88) Late Paleoindian Angostura component "is one of the very few that has been well documented anywhere in Texas." She also noted there was a Late Paleoindian continuum in terms of the lithic traditions, but the large ovens found at other similarly dated sites

indicate an Archaic cooking tradition. She further noted that at the time of this transition between Late Paleoindian and Early Archaic, "localized hunting and gathering groups were thoroughly familiar with a broad range of plants and animals…that indicates a lengthy developmental phase still to be fully recognized in the archeological record" (Decker et al. 2000: 303). Assuming this to be true on a regional basis, it can be inferred that Angostura lithic tradition continuum may be present at 41TV2408 if there is a presence of Late Paleoindian through Early Archaic components at the site. The lithic assemblage may also reveal regional variations of lithic manufacture as Goode (2002: 219-227) has demonstrated with the Round Rock assemblage at the Anthon Site. Late Prehistoric lithic assemblages at 41TV2408 can add information to the understanding of neighboring regional lithic differences and distributions (Goode 2002: 23-239) by analyzing lithic assemblages and contributing to the Central Texas archeology database.

Looting Disturbance

In May 2009, GTI archaeologists noted the presence of one hand-made ground disturbance area roughly 90 x 60 cm in dimension within the AISD Bus Terminal Project area. At the time, archaeologists described the disturbance as a "previously excavated pit" and documented the soil profile as Shovel Test 9 (Iruegas et al 2009:34). The 2009 AISD Bus Terminal southern project APE boundary did not extend into what is currently known as the April 2012 AISD 8 Acre Access Road Project APE, so assessment of this ground disturbance feature in the context of more concentrated looter holes at the boundary between the AISD 8 Acre Access Road and the (November 2012) AISD Additional 2.7 Acre Access Road Project APE was not possible. The "previously excavated pit" in the Bus Terminal Project APE, in all probability, represents the northern extent of the looting activity. Surveyors flagged the (April 2012) 8 Acre Access Road Project APE. GTI archaeologists did not observe or assess the main concentration of the looter holes until the November 2012 intensive survey of the Additional 2.7 Acre Access Road Project APE. The landowner has given AISD a permanent easement for each project area. Therefore, archaeologists were not able to extend the survey area into privately owned property until given authority to do so by AISD and the Antiquities Permit process. A general description of the looter holes within the context of 41TV2408 is provided in the Site Description within the Research Design. The looting puts some limitations on the NR and SAL test investigations, because the looter holes and backdirt extends into the access road alignment. The location of the test units will be placed within the access road alignment that contains midden stratigraphic integrity, as evidenced by ST-4. All care will be taken to avoid excavating test units in looter backdirt.

Research Design

NRHP SAL Eligibility Testing Plan

The research topics presented above have been developed to address specific NRHP and SAL Testing questions for prehistoric resources utilization located within the Boggy Creek drainage basin at the AISD Additional 2.7 Acre Access Road Project. The proposed investigations anticipate recovering prehistoric cultural artifacts characterized by their integrity of location, material, and association. This section identifies the type of work to be undertaken, conforming to one of the categories of archaeological investigation listed in 13TAC26.20. A clear statement of the methods that are employed during all phases of work follow the guidance on the preparation of appropriate research designs according to 13TAC26.21(d) [Personal Communication 2012: Bill Martin November 29, 2012]. The area to be investigated is defined in the context of the APE. The research design clearly states where artifact collection is proposed and whether the land on which the work is conducted is "privately owned" or "publicly owned" or contains both privately and publicly owned. This section explicitly details the sampling intensity, test unit size and location, screen size, and sediment sample volumes. The methods are justified with reference to details of the project background information and appropriate theory demonstrating the adequacy of the methods, as well as justification explaining how the methods provide data that could address important questions of prehistory and identifies such questions. A collection policy is specified and describes if artifacts are collected from private or public land with a written transfer of ownership to the State that includes the intended curation facility and a commitment to prepare collections for curation according to the Council of Texas Archaeologist's Standards and Guidelines for Artifact Curation.

The Research Design serves as a general backdrop to assess whether 41TV2408 is eligible for inclusion in the NRHP under Criteria D or as an SAL. To be considered eligible, the sites' deposits must be able to adequately address 1 or more of these topics. A breakdown of what is necessary to address each topic is presented below.

1) Chronology: To address this topic, the sites must possess preserved floral/faunal remains and hearths in conjunction with lithic tools and debitage. The primary goal is to determine if well-datable cultural material assemblages are represented at the sites.
2) Environmental Reconstruction/Climate Change: Again, to address this topic, the sites must possess preserved floral/faunal remains. Any preserved plant remains would allude to the type of environment from which they were gathered. Similarly, preserved charcoal specimens at these sites can also be identified and lend themselves to the depiction of the local environment at the time of the site's occupation, as well as, radiocarbon dating of the occupation. Preserved faunal remains would also serve as environmental indicators. In addition to reconstruction of environment and climate, any preserved remains would also shed light on what specific resources (fuel, food, etc.) the

prehistoric inhabitants targeted as a potential unique resource that could lead to conclusions concerning *fixed territories*.

3) Subsistence: Evidence of hearths, cooking ovens, or middens can begin to address geophyte exploitation with any preserved floral/faunal remains that the cooking features may contain (i.e., what resources were being processed that necessitated the use of earth ovens and thereby resulted in the subsequent accumulations of spent cooking rock?). Any preserved charcoal within the cooking feature matrices would also serve to date the feature accumulations. Further delineation of cooking feature formation would hinge on the internal structure of the features (i.e., are there apparent baking pits or basins that would suggest they were formed with particular kinds of rocks for boiling, grilling, or poaching, or are the deposits jumbled and more reflective of multiple construction episodes?). A primary goal is to determine if sotol, yucca, camas, chenopodium, or amaranth were a prehistoric food source at the site, and if population increase with subsequent fixed territories is evidenced at the sites resulting from exploitation of possible superabundant natural food resources.
4) Settlement: To address these research questions and test Dering's hypothesis that depletion of local resources governed residential mobility, intact cooking features are needed with preserved macro and micro-botanical samples from xeric and mesic conditions.
5) Behavior Change/Transition between Paleoindian and Early Archaic: To address this topic, the sites must primarily possess datable charred botanical remains as well as temporally diagnostic lithic artifacts that date between the transition periods. A radiocarbon assay coupled with distinct and temporally associated tool assemblages would be needed to delineate a single component occupation in either time periods. However, radiocarbon assay of varying ages, in the context of differing temporally distinct tool assemblages, would suggest that the sites and their features accumulated over a period of time, which could also address questions for later prehistoric and historic periods.
6) Lithic Technology and Function: Paramount to these research questions is the presence of Tortuga/Matamoros points and Late Paleoindian with Early Archaic lithic tools, or in the context of Archaic cultural features, to establish similar lithic tradition continuums. The presence of other beveled bifaces and lithic tools may also show regional or territorial differences, as do the Round Rock assemblage tools from the Anthon Site.

Methodology

To determine the NRHP eligibility and SAL designation status of 41TV2408 in conjunction with the stated Research Design goals, the PI proposed to establish a datum, test unit matrix, and place five to ten test units within the access road alignment where the midden deposits are located. Typically, archaeologists would conduct a grid network of shovel tests to determine the frequency artifact concentrations followed by geomorphological investigations with backhoe trenching. Quigg (et al. 2000: 296-297) and Decker et al. (2000: 305) both note that intensive eligibility testing plans that incorporate geomorphology are necessary to determine if data recovery at any given site

is warranted. In the case of AISD's Access Road Project, however, shovel tests have been conducted that show the frequency of depth and concentrations; the midden contains the most concentrated and frequent number of artifacts that happen to be directly within the Additional 2.7 Acre Access Road Project APE closest to the western APE boundary (Figure 39), particularly within the access road alignment of proposed construction (12 meters); The proposed project has an access easement of approximately 50 to 100 feet wide (roughly 33 meters).

Figure 39: Map Showing Survey Area Boundaries and Prehistoric Midden Area

Archaeologists used a Sokia Axis III submeter GPS to establish a site datum at the northern boundary of the Additional 2.7 Acre Access Road Project APE boundary just south of the looter back-dirt piles. Ten 1x1-m Test Units were established in a north-south and east-west axis. The purpose of the north-south axis test unit grid matrix was to obtain an overall soil profile of the topographic toe-slope where known artifact concentration areas were present, based on the shovel testing results. The ten test units were separated evenly into two rows. In the event cultural lithic and organic materials were encountered in each of the test units, the PI would excavate all ten test units to exhaust the research potential within the access road alignment. The remainder of the site would be preserved on privately owned land. The number of test units would be conducted incrementally to judge whether more units were necessary. No less than five test units would be excavated at each site. If the five initial test units were devoid of cultural material that would warrant data recovery, and there were no other features to be excavated, the PI and AISD would consult with the THC to determine if test Level investigation fieldwork was complete. GTI consulted with AISD and THC on February 14, 2013 and February 19, 2013 to discuss the progress of Test Unit 4 (TU-4) and determine that fieldwork was complete, respectively. In consultation with Mr. Brad Jones of THC, GTI noted the presence of a large deep rodent burrow (greater than 40 cm deep) in TU-4 Level 3 that comprised over 60 percent of the test unit. Test Unit 4 was located in the project APE's northern boundary area. Consultation was necessary at this juncture, because TU-4 was placed adjacent to the survey Level Shovel Test 4 that demonstrated the intact soil stratigraphic deposits with highest concentration of lithic debitage; the large rodent borrow truncated and compromised the data from TU-4. Mr. Jones concurred that TU-4 should be terminated due to the rodent borrow, and he recommended that another test unit be placed in the northern project APE, as well as, excavate another test unit to expose a larger portion of the single hearth feature. Mr. Jones also recommended that the floated soil sample be analyzed for macrobotanical remains and identification.

All test units were excavated in 10-cm Levels. All excavated matrix was screened through 6-mm (1/4-inch) hardware mesh, and all recovered artifacts were collected and bagged accordingly. Additionally, a 20x20-cm soil column (1 gallon polyurethane bag) was collected from Feature 1 hearth for flotation. Standard Test Unit Excavation Forms were maintained for each excavated Level within each test unit. Following the completion of each test unit excavation, at least 1 soil profile was mapped, photographed, and described. All preserved floral or faunal remains that were encountered during the test investigations were collected in the appropriate manner for identification and possible radiocarbon dating. GTI noted, however, during AISD and THC fieldwork consultation that less than 15 milligrams of charcoal was present in the soil sample from the hearth; 15 milligrams was the minimum requirement for AMS Radio Carbon dating.

Archaeologists kept a daily log of all activities at the sites and maintain appropriate field notes regarding the investigations. As noted above, standard test unit Level forms were completed for all excavated Levels. Following the field investigations and laboratory processing, a draft report of the testing investigations was completed and submitted for AISD and THC review.

All cultural materials recovered were processed, washed, cataloged, and placed in analytical categories, according to Texas Archaeological Research Laboratory (TARL) curation policy and procedures. TARL is guided by 36 CFR Part 79, Curation of Federally Owned and Administered Archeological Collections, and TARL adheres to the Council of Texas Archeologists' Guidelines and Standards for Curation (see http://counciloftexasarcheologists.org/wordpress/wp-content/uploads/CTA-CurationGuidelines-2011-03-03-NL.pdf).

Special analyses such as radiocarbon assays, botanical identification, faunal identification, and lithic analysis were dependent on the recovered samples. All collected artifact and botanical specimens were bagged and labeled in the field accordingly. Any charred botanical specimens were to be collected in foil pouches for potential radiocarbon dating and species identification—none were observed. All recovered artifacts were returned to the lab for further processing and analysis. Special analyses include radiocarbon assays, macro-botanical analysis, faunal analysis, lithic debitage and diagnostic tool analysis, and ceramic analysis. As noted, less than 15 milligrams of charred botanical material was recovered in the soil flotation sample from Feature 1 hearth, and faunal remains and ceramic artifacts were not present during the investigations.

Processing by laboratory staff included flotation of soil samples recovered from Feature 1 hearth. The flotation sample included handpicking botanical materials from the heavy fraction and charred materials recovered through a 1-mm mesh from the light fraction. Laboratory staff performed 2 sorts. One was performed with the naked eye, scanning for visible charred botanical remains, and the second with the aid of a microscope. The macro-botanical specimens recovered during the excavations or from flotation samples were sent to Dr. Phil Dering's Shumla Archeobotanical Services for identification and analysis.

Excavation and analysis human osteological remains were not part of this contract. In the event human remains were encountered, all work would cease in the immediate area, and the PI would notify AISD to contact and notify the THC for their review and recommendations. Lithic debitage was analyzed by the PI's laboratory staff members separating lithic debris into the categories of flakes (primary, secondary, and tertiary, chips, corticated and decorticate, shatter). The lithic were subdivided into chert and coarse-grained chert categories. Additional lithic notations were provided regarding bifacial thinning flakes, pressure flakes, and percussion flakes, when appropriate.

Results

Archaeological hand excavated 1 x 1 meter test unit investigations at 41TV2408 were conducted in order to determine if the site was eligible for listing in the National Register of Historic Places (NRHP) and designation as a State Archaeological Landmark (SAL) (36CFR800.5) and [13TAC26.7]. The primary goals of the investigations were to identify if datable cultural material assemblages were represented at the site. Typically, an archaeology site is eligible for listing in the NRHP and designation as a SAL when diagnostic prehistoric spears, dart points, or arrowheads are present at the site in the context of cultural features, like, hearths, cooking ovens, and middens that contain datable charcoal, floral, and faunal remains. The Research Design focused on prehistoric cultural material evidence which could indicate important information to our understanding of Texas prehistory was present at 41TV2408 [36CFR60.4(d)] and [13TAC26.7(F)] within the project's direct APE. In general, archaeologists excavated a single hearth feature and documented ephemeral surfaces with an abundance of lithic debris and some tools. Archaeologists did not encounter, however, diagnostic lithic, charcoal, floral, and faunal material within the excavated six test units. The results are presented in Test Unit descriptions and followed by lithic analysis in the next chapter.

Test Unit Descriptions

Prior to fieldwork, archaeologists cleared vegetation and small trees to prepare the site for the test unit grid matrix (Figure 40 and Figure 41). A total of six Test Units were excavated at the site. The Test Units were placed in two parallel transects that were four meters apart along a north south axis in order to provide a cross sectional profile of the site within the east-west access road alignment. The grid's north south axis was placed along the topographic toe-slope where artifacts were documented during the intensive archaeological survey as more abundant and the soils were the deepest. Test Unit 1 and Test Unit 2 marked the beginning of the two parallel transects and were located four meters apart along the southern boundary of the access road alignment. Test Unit 2 revealed Feature 1, a burned rock hearth documented during the National Register Testing efforts. Test Unit 3 was located in the north south transect four meters north of Test Unit 2 and was adjacent to the area where Shovel Test 2 was excavated during the survey efforts. Test Unit 4 was excavated 8.5 meters north in the north south alignment with Test Unit 1 and was located directly adjacent to Shovel Test 4. Test Unit 5 was located one meter south and four meters west of Test Unit 4 in the transect alignment with Test Unit 2 and Test Unit 3. Lastly, Test Unit 6 was opened directly north of Test Unit 2 in order to further document Feature 1 (Figure 42 and Figure 43).

Figure 40: Site 41TV2408 Looking South

Figure 41: Site 41TV2408 Looking North

Test Unit 1

Test Unit 1 was excavated to a depth of 170 cm below datum. A total of 92 artifacts were documented in Test Unit 1, and were recovered from three arbitrary 10 cm Levels. (Figure 44). The artifacts from Test Unit 1 represent 10.17 percent of the total assemblage collected and recorded at site 41TV2408.

Level 1 produced six debitage, one uniface, one nutting stone, and one burned rock. Archaeologist photographed and mapped in situ the uniface and nutting stone laying flat on a surface near the bottom of Level 1 (Figure 45). A large root bisected the unit in this Level extending from the northwest corner to the south east. The highest density of artifacts was recovered from Level 2, and included 40 debitage, one utilized secondary flake, one thumbnail scraper, four tested pebbles, and nine burned rocks. The burned rocks were scattered throughout Level 2 and did not form any concentration or pattern indicative of a feature. Level 3 produced 20 pieces of debitage, one utilized secondary flake, one biface fragment, a core and five burned rocks. Artifacts were present throughout the soil profile down to the unconsolidated bedrock. The unconsolidated bedrock undulated within Level 3 of Test Unit 1 varying from 165 to 172 cm below datum across the unit (Figure 46). The unconsolidated bedrock impeded further excavation, and the test unit was terminated, as seen in the eastern soil profile drawing (Figure 47).

Figure 44: Table of Test Unit 1, 41FB2408

Level	Depth (cmbd)	Feature #	Artifact Category	Total	Soils
1	145-150		Debitage	6	Dark Brown Silty Clay Loam 10YR2/2
			Uniface, Chert	1	
			Nutting Stone	1	
			Burned Rock (NC)	1	
			Subtotal	*9*	
2	150-160		Debitage	40	Dark Brown Silty Clay Loam 10YR2/2
			Utilized Flake, Secondary, Chert	1	
			Thumbnail Scraper, Chert	1	
			Tested Pebbles, chert	4	
			Burned Rock (NC)	9	
			Subtotal	*55*	
3	160-170		Debitage	20	Dark Brown Silty Clay Loam 10YR2/2
			Utilized Flake, Secondary, Chert	1	
			Biface Fragment, Chert	1	
			Core, Chert	1	
			Burned Rock (NC)	5	
			Subtotal	*28*	
			Total	*92*	
			Percentage	*10.17%*	*of total artifact assemblage*

Figure 45: Test Unit 1, Level 1 Looking North

Figure 46: Test Unit 1, Level 3 Looking North

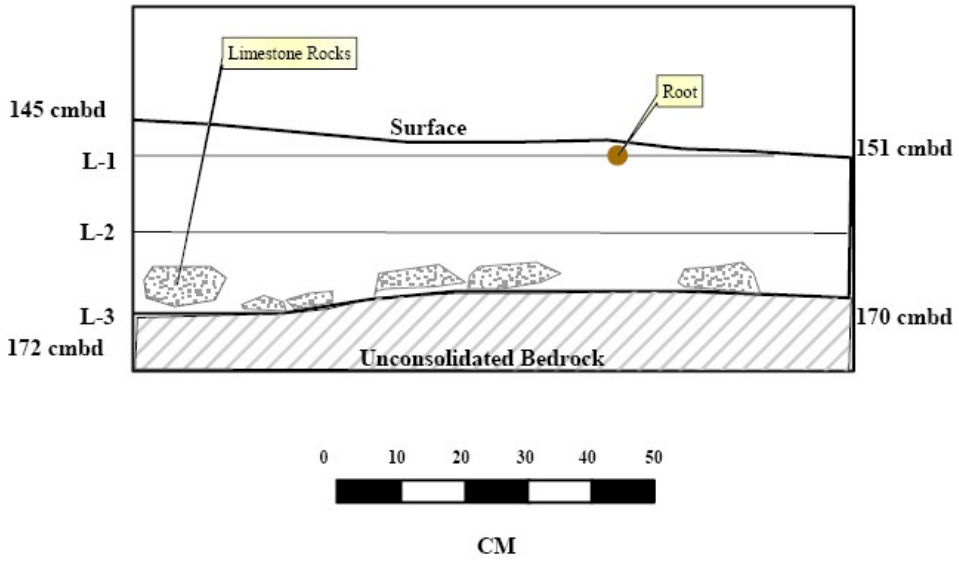

Figure 47: Test Unit 1, Eastern Wall Profile

Test Unit 2, Feature 1

Test Unit 2 was excavated to a depth of 172 cm below datum. The only feature recorded at site 41TV2408 was initially uncovered in the northeast quadrant of Test Unit 2. Archaeologists assigned Feature 1 to this burned rock hearth. The feature was uncovered within Level 1 at 155 cm below datum. A total of 248 artifacts were documented in Test Unit 2, of which 63 were identified as general unit collection and 185 were recovered directly from the feature fill associated with Feature 1 (Figure 48). The artifact assemblage, as a whole, represents 27.40 percent of the total assemblage documented at site 41TV2408.

The general unit collection included all materials from three quarters of the unit excavated, and represents approximately 25 percent of the overall collection from the unit. General unit artifact collection and recording from Level 1 included ten debitage, one core, ten rabdotus and three burned rocks. General unit collection from Level 2 included 33 debitage, one tested pebble, a utilized tertiary flake, one ironstone pebble, and three burned rocks.

Archaeologists immediately noticed the increased density of lithic material in the north eastern quadrant of Test Unit 2 and began to screen the soils separately. The artifact assemblage from Feature 1 represents 75 percent of the collection from Test Unit 2. The upper portion of Test Unit 2, Level 1, Feature 1 from 151 to 155 cm below datum produced 12 debitage, two rabdotus, and an ironstone rock. The lower portion of Test

Unit 2, Level 1, Feature 1 from 155 to 160 cm below datum produced five debitage, one utilized secondary flake, one uniface, one core and 23 burned rocks. Test Unit 2, Level 2, Feature 1 contained 43 debitage, two utilized secondary flakes, one core, one rounded pebble, one large nutting stone, and 62 burned rocks.

Archaeologists noted there were no charcoal remains observed during the excavation of Feature 1. A flotation sample was collected, however, from the feature that extended from 155 to 172 cm below datum. The sample was separated into the heavy and light fraction. GTI archaeologists sorted the lithic debris from the heavy fraction of the flotation sample which produced a total of 29 pieces of debitage. During the sorting of debitage, GTI archaeologists noted two small pieces of charcoal that were so small they would not measure even in milligrams. In order to obtain as much information from the collections documented at site 41TV2408, the light and heavy fractions along with the two small pieces of charcoal were submitted to Dr. Phil Dering for macrobotanical examination who recovered an additional five charcoal fragments smaller than 3 millimeters. Unfortunately, the sample size was too small to submit for AMS or Radio Carbon dating, which requires at least 15 milligrams. Dr. Dering's discussion of the macrobotanic results follows the lithic analysis. As a brief summary, Dr. Dering was unable to identify the genus of the minute charred wood fragments but was able to state the specimens were not fragments of juniper or pine, but rather from a seed-bearing hardwood tree or shrub. No seed, fruit, or nut fragments were noted in the sample.

Feature 1 as previously mentioned was located within the northeast quadrant of Test Unit 2 where archaeologists noted an increase in lithic concentration. The top elevation of the burned rock hearth was 155 cm below datum (Figure 49 and Figure 50). The burned rock hearth was constructed of rounded heavily corticated chert cobbles and gravels that were abundant in the nearby local upland setting. Archaeologists indicated that some of the burned rocks associated with Feature 1 appeared to be slightly dispersed. As archaeologists continued to excavate into Level 2 they documented that Feature 1 expanded approximately 20 cm to the west and south (Figure 51). The large nutting stone in Level 2 hearth feature fill can be seen laying at the southern edge of Feature 1 (Figure 52). Undulating unconsolidated bedrock began to surface at varying depths of 169 to 175 cm below datum in the area west and southwest portion of Test Unit 2. Excavation of Feature 1 indicated that the hearth was sitting directly on top of the underlying bedrock. Test Unit 6 was excavated north of Test Unit 2 to further investigate Feature 1. The soil profile shows the distribution of burned rocks in the soil profile that extends between Test Units 2 and 6 (Figure 53).

Figure 48: Table of Test Unit 2, 41TV2408

Depth (cmbd)	Level	Feature #	Artifact Category	Total	Soils
151-160	1		Debitage	10	Dark Brown Silty Clay Loam 10YR2/2
			Core, Chert	1	
			Rabdotus (NC)	10	
			Burned Rock (NC)	3	
			Subtotal	*24*	
160-170	2		Debitage	33	Dark Brown Silty Clay Loam 10YR2/2
			Tested Pebbles, chert	1	
			Utilized Flake, Tertiary, Chert	1	
			Ironstone pebble	1	
			Burned Rock (NC)	3	
			Subtotal	*39*	
151-155	1	1	Debitage	12	Dark Brown Silty Clay Loam 10YR2/2
			Rabdotus	2	
			Ironstone rock	1	
			Subtotal	*15*	
155-160	1	1	Debitage	5	Dark Brown Silty Clay Loam 10YR2/2
			Core, Chert	1	
			Uniface, Course Grained Chert	1	
			Utilized Flake, Secondary, Chert	1	
			Burned Rock (NC)	23	
			Subtotal	*31*	
160-172	2	1	Debitage	43	Dark Brown Silty Clay Loam 10YR2/2
			Utilized Flake, Secondary, Chert	2	
			Core, Chert	1	
			Rounded pebble	1	
			Nutting Stone	1	
			Burned Rock (NC)	62	
			Subtotal	*110*	
155-172	1-2	1	Flotation Sample	1	Dark Brown Silty Clay Loam 10YR2/2
			Debitage	28	
			Subtotal	*29*	
			Total:	*248*	
			Percentage:	*27.40%*	*of total artifact assemblage*

Figure 49: Test Unit 2, Level 1, Feature 1

Figure 50: Test Unit 2, Level 1, Feature 1 (close-up)

Figure 51: Test Unit 2, Level 2, Feature 1

Figure 52: Test Unit 2, Level 2, Feature 1 (close-up), Nutting Stone

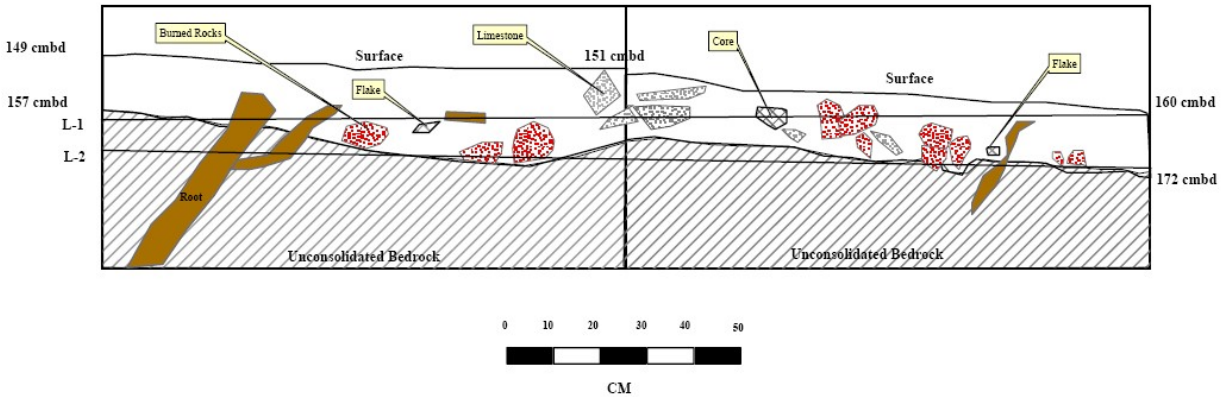

Figure 53: Test Unit 2 and Test Unit 6 East Wall Profile

Test Unit 3

Test Unit 3 was excavated to a depth of 130 cm below datum. A total of 230 artifacts were documented in Test Unit 3, and were recovered from three arbitrary 10 cm Levels. (Figure 54). The artifacts from Test Unit 3 represent 25.41 percent of the total assemblage collected and recorded at site 41TV2408.

Level 1 produced 11 debitage, 19 rabdotus, and one burned rock. The highest density of artifacts documented in any of the test united excavated at 41TV2408 were recovered from Level 2 of Test Unit 3, and included 119 debitage, nine rabdotus, one core, one tested pebble, a utilized secondary flake, a utilized tertiary flake, three biface fragments and 24 burned rocks. Although there was a high density of artifacts documented in Level 2, the burned rocks appeared to be scattered throughout Level 2 and did not form any concentration or pattern indicative of a feature. Level 3 produced 27 pieces of debitage, one utilized secondary flake, one utilized tertiary flake, and 11 burned rocks. By far Test Unit 3 produced the largest number artifacts that were not directly associated with a feature. Test Unit 3 also contained the highest frequency of quick use tools such as utilized flakes (N=4), as well as, tools represented by the biface fragments (N=3) indicating that this area of the site may have been focused on lithic reduction and tool production. Artifacts were present throughout the soil profile, and extended down to the unconsolidated bedrock. The unconsolidated bedrock undulated within Level 3 of Test Unit 3 varying from 126 to 139 cm below datum across the unit (Figure 55). The unconsolidated bedrock impeded further excavation, and the test unit was terminated. The undulating bedrock is visible in the eastern wall profile (Figure 56).

Figure 54: Table of Test Unit 3, 41TV2408

Depth (cmbd)	Level	Feature #	Artifact Category	Total	Soils
114-120	1		Debitage	11	Dark Brown Silty Clay Loam 10YR2/2
			Rabdotus (NC)	19	
			Burned Rock (NC)	1	
			Subtotal	31	
120-130	2		Debitage	119	Dark Brown Silty Clay Loam 10YR2/2
			Rabdotus (NC)	9	
			Core, Chert	1	
			Tested Pebbles, chert	1	
			Utilized Flake, Secondary, Chert	1	
			Utilized Flake, Tertiary, Chert	1	
			Biface Fragment, Chert	3	
			Burned Rock (NC)	24	
			Subtotal	159	
130-140	3		Debitage	27	Dark Brown Silty Clay Loam 10YR2/2
			Burned Rock (NC)	11	
			Utilized Flake, Secondary, Chert	1	
			Utilized Flake, Tertiary, Chert	1	
			Subtotal	40	
			Total:	*230*	
			Percentage:	*25.41%*	*of total artifact assemblage*

Figure 55: Test Unit 3, Level 3

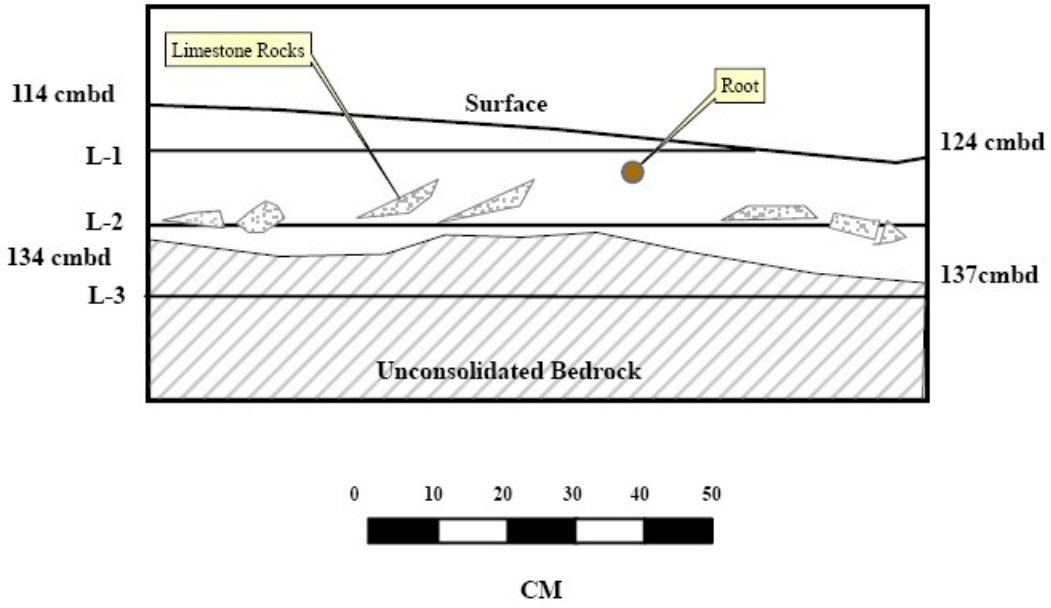

Figure 56: Test Unit 3, East Wall Profile

Test Unit 4

Test Unit 4 was excavated to a depth of 60 cm below datum. A total of 138 artifacts were documented in Test Unit 4, and were recovered from three arbitrary 10 cm Levels (Figure 57). The artifacts from Test Unit 4 represent 15.25 percent of the total assemblage collected and recorded at site 41TV2408.

Level 1 produced the highest density of artifact in Test Unit 4 which included 20 debitage, three rabdotus, one scraper, one utilized flake, one tested pebble, and 28 burned rock. Archaeologists mapped and photographed a scraper and a few scattered burned rocks laying flat on a surface in situ within Level 1 40 cm below datum (Figure 58). The burned rocks documented did not appear to form any pattern or represent a cultural feature. Level 2 contained 15 debitage, nine rabdotus, a utilized secondary flake, and 22 burned rocks. Level 3 produced 12 pieces of debitage, six rabdotus, one utilized secondary flake, and 18 burned rocks. At the bottom of Level three, archaeologists encountered a cavity that widened and exposed a large rodent borrow in the northeastern corner of Test Unit 4. Archaeologists documented the depth of the rodent borrow down 40 cm, and it encompassed approximately 60 percent of the test unit. The depth of the rodent borrow included the depth of the buried cultural lens with burned rock observed in Shovel Test 4 during the archaeological survey of the project area. The rodent borrow truncated and compromised the data from Test Unit 4 and the greatest intact depth of the site within the project APE. Upon encountering the rodent burrow, archaeologists consulted with Mr. Brad Jones of the Texas Historical Commission (THC) and determined the integrity of cultural material was compromised, and Test Unit 4 was

terminated at 56 cm below datum within Level three (Figure 59). The east wall profile of Test Unit 4 demonstrated the location and impacts of the rodent borrow (Figure 60)

Figure 57: Table of Test Unit 4, 41TV2408

Depth (cmbd)	Level	Feature #	Artifact Category	Total	Soils
28-40	1		Debitage	20	Dark Brown Silty Clay Loam 10YR2/2
			Scraper, Tertiary, Chert	1	
			Scraper, Secondary, Chert	1	
			Tested Pebbles, chert	1	
			Rabdotus (NC)	3	
			Burned Rock (NC)	28	
			Subtotal	*54*	
40-50	2		Debitage	15	Dark Brown Silty Clay Loam 10YR2/2
			Utilized Flake, Secondary, Chert	1	
			Rabdotus (NC)	9	
			Burned Rock (NC)	22	
			Subtotal	*47*	
50-60	3		Debitage	12	Dark Brown Silty Clay Loam 10YR2/2
			Utilized Flake, Secondary, Chert	1	
			Rabdotus (NC)	6	
			Burned Rock (NC)	18	
			Subtotal	*37*	
			Total:	*138*	
			Percentage:	*15.25%*	*of total artifact assemblage*

Figure 58: Test Unit 4, Level 1

Figure 59: Test Unit 4, Level 3

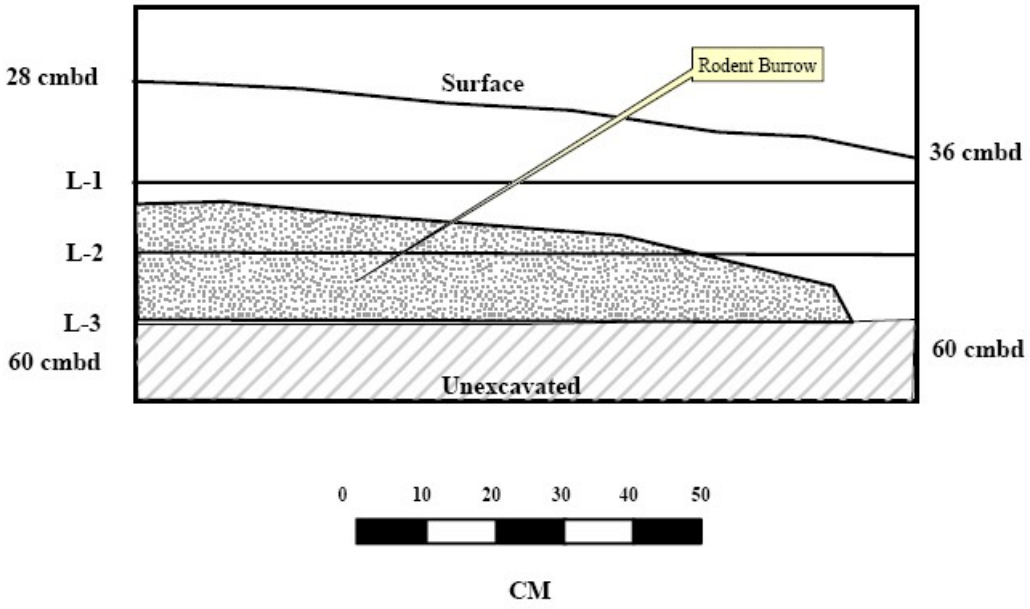

Figure 60: Test Unit 4, East Wall Profile

Test Unit 5

In consultation with the THC, GTI archaeologist placed Test Unit 5 in the transect of units four meters west of Test Unit 4 and one meter south. Test Unit 5 was excavated to a depth of 100 cm below datum. A total of 27 artifacts were documented in Test Unit

5, and were recovered from two arbitrary 10 cm Levels. (Figure 61). The artifacts from Test Unit 5 represent 2.89 percent of the total assemblage collected and recorded at site 41TV2408.

Level 1 produced the highest density of artifact in Test Unit 5 which included 12 debitage, and three burned rock. Level 2 contained five debitage, one rabdotus, one core, a utilized secondary flake, and four burned rocks. The unconsolidated bedrock appeared within Level 2 of Test Unit 5 (Figure 62). It impeded further excavation, and the test unit was terminated. The undulating surface of the unconsolidated bedrock is visible in the east wall profile drawing (Figure 63)

Figure 61: Table of Test Unit 5, 41TV2408

Depth (cmbd)	Level	Feature #	Artifact Category	Total	Soils
81-90	1		Debitage	12	Dark Brown Silty Clay Loam 10YR2/2
			Burned Rock (NC)	3	
			Subtotal	*15*	
90-100	2		Debitage	5	Dark Brown Silty Clay Loam 10YR2/2
			Utilized Flake, Secondary, Chert	1	
			Core, Chert	1	
			Rabdotus (NC)	1	
			Burned Rock (NC)	4	
			Subtotal	*12*	
			Total:	*27*	
			Percentage:	*2.98%*	*of total artifact assemblage*

Figure 62: Test Unit 5, Level 2

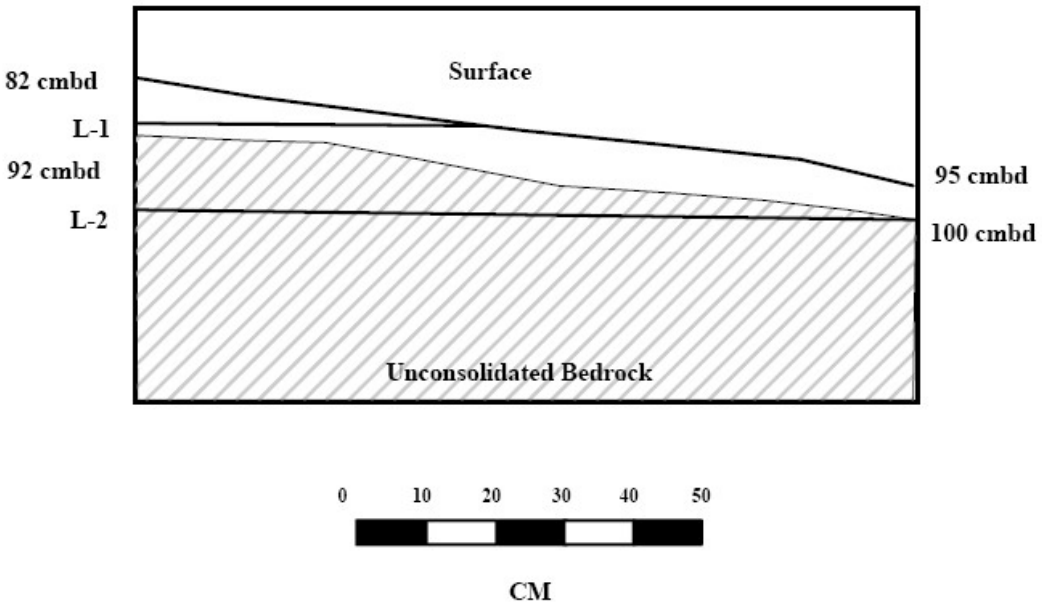

Figure 63: Test Unit 5, East Wall Profile

Test Unit 6

In consultation with the THC, GTI archaeologist placed Test Unit 6 directly north of Test Unit 2 in order to further explore Feature 1—the only intact feature documented at site 41TV2408. Test Unit 6 was excavated to a depth of 170 cm below datum. A total of 170 artifacts were documented in Test Unit 6 (Figure 64). Evidence of Feature 1 did not appear until the bottom of Level 1. Therefore, the assemblage from Level 1of Test Unit 6 was collected as part of the general unit collection. Once archaeologists reached the bottom of Level 1, and burned rocks appeared to fall in alignment with the expected location of Feature 1, the artifacts were collected as part of the feature fill. The artifacts from Test Unit 6 represent 18.78 percent of the total assemblage collected and recorded at site 41TV2408.

Figure 64: Table of Test Unit 6 Artifacts

Depth (cmbd)	Level	Feature #	Artifact Category	Total	Soils
145-160	1		Debitage	67	Dark Brown Silty Clay Loam 10YR2/2
			Rabdotus	11	
			Burned Rock (NC)	22	
			Subtotal	*100*	
160-170	2	1	Debitage	22	Dark Brown Silty Clay Loam 10YR2/2
			Utilized Flake, Secondary, Chert	2	
			Burned Rock (NC)	46	
			Subtotal	*70*	
			Total:	*170*	
			Percentage:	*18.78%*	*of total artifact assemblage*

The northwest corner of Level 1, Test Unit 6, was 145 cm below datum, and the remaining beginning elevations for the unit were 149 in the northeast corner and 151 cm below datum in the center, southwest and southeast corners; i.e. the northwest corner of the test unit was almost 4 to 6 cm higher than the majority of the test unit beginning elevations. Due to this undulating surface, GTI archaeologist defined the bottom of Level 1 to be at 160 cm below datum instead of 150 cm below datum, which also corresponded with the top of Feature 1 (Figure 65). Archaeologists did not encounter evidence of Feature 1 within the first level of Test Unit 6. Level 1 produced the higher density of artifacts containing 67 debitage, 11 rabdotus and 22 burned rocks. As Feature 1 began to be defined, archaeologist collected the artifacts from Test Unit 6, Level 2, as coming from the feature fill. Level 2 produced 22 debitage, two utilized secondary flakes and 46 burned rocks (Figure 66).

GTI archaeologists noted that Feature 1 was more oval in shape and extended to the north within Test Unit 6. The burned rocks documented within the test unit also appeared to be more dispersed than what was observed in Test Unit 2. This portion of Feature 1 also appeared to contain a lower density of artifacts as compared to those documented from Test Unit 2 which had exposed the perimeter of Feature 1. Archaeologists also noted the burned rocks in this portion of Feature 1 appeared heavily heated and more shattered that those documented along the edge of Feature 1 in Test Unit 2. The intensity of heat needed to shatter the burned rocks to that extend as observed in Test Unit 6 identifies the possible central cooking or food processing area within Feature 1. As in Test Unit 2, Feature 1 was also documented as resting directly upon the underlying unconsolidated limestone bedrock within Test Unit 6. The soils profile for Test Unit 6 is presented in Figure 53 with the profile for Test Unit 2 to demonstration the distribution of burned rocks within Feature 1.

Figure 65: Test Unit 6, Level 1

Figure 66: Test Unit 6, Level 2, Feature 1

Summary

Investigations were conducted in order to determine if site 41TV2408 was eligible for listing in the NRHP as well as for SAL designation. Archaeologists documented a single burned rock hearth, identified as Feature 1 in Test Unit 2 and Test Unit 6, which was constructed of heavily corticated chert cobbles and gravels gathered from the surrounding upland setting. This feature demonstrated exploitation and processing of local resources. Site 41TV2408 overall did not contain a high density of cultural material within the project APE. Archaeologists were able to identify, however, some intra site activity areas. One of the areas was Feature 1, utilized for food processing as well as a

gathering place for tool production. Other lithic reduction and tool production areas were evidenced by the abundance of lithic debris and diversity of informal and discarded broken formal tools recovered from Test Unit 1 and Test Unit 3. GTI archaeologists gleaned what information they could from site 41TV2408, and the site lacked well-datable cultural material assemblages and faunal remains, as well as, adequate amount of preserved datable charcoal floral materials for radio carbon dating. In the context of the stated research design questions, the cultural material excavated at 41TV2408 within the project APE does not address chronology, environmental reconstruction/climate change, settlement, or behavior change/transition between Paleoindian and Early Archaic. Archaeologists were able to address subsistence and lithic technology and function at a minimal level regarding the nutting stones along with formal and informal tool without an established timeframe in the Lithic Analysis chapter.

Lithic Analysis

The following chapter summarized the lithic analysis of cultural materials recovered during the National Register of Historic Place (NRHP) and State Archaeological Landmark (SAL) testing investigations at site 41TV2408. This analysis includes all lithic materials recovered from the site.

The lithic materials were quantified by test unit provenience to determine horizontal and vertical site density. The densities observed on the horizontal plane were used to identify intrasite occupational zones. Lithic debris was categorized into: primary, secondary, tertiary, corticated or decorticate chip, and shatter, and when appropriate divided by chert and coarse-grained chert. This data helped determine activities at the site, such as lithic procurement, reduction, and tool manufacturing. Tested cobbles and cores are included in the counts to assist in understanding potential activities. Formal and informal lithic tools were described in detail and measurements were provided in millimeters (mm).

Artifact density, as Hester notes (1995: 427), "manifests different archeological records." By identifying discrete intrasite occupational zones, there is a potential that activity areas can also be determined. The information generated from the debitage analysis in other words was to provide a baseline of information about how the site was used, how intensively it was occupied, what activities took place, and where these activity areas were in relation to certain types of features defined at the site.

The first section below describes the sorting methodology and a discussion of how this was used to identify potential activities and activity areas based on the percentages of categorized flake groups. Afterwards, discussions of lithic debris density by test unit excavation is presented and considered in the context of the artifact density across the horizontal plane, and the percentages of categorized lithic debris in relation to potential patterns and identifiable activity areas. The chapter ends with a summary of the lithic debris.

Sorting Methodology

Lithic debris includes all debitage (flakes, chips and shatter), cores and tested cobbles. All flakes contain an identifiable platform and ventral surface with a bulb of percussion, ripples or force lines. Primary flakes were categorized as having 90 percent of the dorsal surface covered with cortex. Secondary flakes contain anywhere from 89 percent to 1 percent cortex on the dorsal surface and lastly tertiary flakes were denuded of cortex. Chips were identified as broken flakes that contain no identifiable platform or bulb of percussion. The chips in general are broken termination of flakes. Corticated chips indicated they contained cortex on one surface and decorticate chips had no cortex. Shatter or angular debris was identified as lithic fragments that contained no identifiable dorsal or ventral surface or any other flake characteristic. In the instance of this analysis the majority of shatter is a product of heating.

In terms of raw material, each flake category was subdivided during analysis and identified either as chert or coarse grain chert. The majority of the specimens analyzed were categorized as chert. The abundance of chert as a raw material resource at site 41TV2408 was evidenced by Feature 1, a burned rock hearth constructed of local highly corticated chert cobbles and gravels. The cortex present on all lithic materials at the site was similar to Collins' description of his (1998:692) upland residual cortex category, described as weathered in appearance with eroded, white, desilicified rind that had red or brown stains resulting from open exposure. In addition to the categorized raw material, archaeologists noted evidence of lithic reduction techniques.

In the context of lithic technology and function questions in the research design, the laboratory director noted the presence of heat treatment based on identifiable pot lids or spalls on the lithic debris. Pot lids and spalls are not a desired result when heat treating lithic material for reduction and tool manufacturing; rather, it represents over-heating. Heat treatment indicates that tool manufacture activities were taking place in association with fire, and heat treatment was a technology related to lithic reduction.

A total of 549 lithic artifacts were recovered from test unit excavations at site 41TV2408. The lithics included debitage, cores, tested pebbles, utilized flakes, scrapers, and nutting stones. Burned Rocks are not included in this lithic analysis. They were tabulated in the field and not collected. The lithics analyzed (N=549) from site 41TV2408 represents 60.66 percent of the artifact assemblage documented. A sample of the lithic debitage categories from each excavated Test Unit level was presented in photographic figures; i.e., not every piece of debitage was photographed. All lithic tools and artifacts recovered from Feature 1 were photographed and presented in the report.

Test Unit 1, 41TV2408

Test Unit 1 represents 14.03 percent of the lithics (N=77) recovered during excavations at site 41TV2408 (Figure 67). Lithic debitage (N=6) recovered from Level 1 included three secondary flakes, one corticate chip and two pieces of shatter. Four of these specimens exhibited heat treating. Figure 68 a–c is a sample of the debitage analyzed. Other lithic materials recovered from Level 1 include a nutting stone. It measures 58.5 mm by 48.1 mm, fitting in palm of ones hand, and weights 127 grams (Figure 69 and Figure 70). The depression within the nutting stone measures 6.4 mm, and is smooth and well worn. Nutting stones also referred to as pitted stones have typically been more common in east Texas, date from the Archaic to Late Prehistoric periods, and were probably used interchangeably for milling and as platforms for nut-cracking (Turner and Hester 1999:308). Turner and Hester (1999) also suggested that some researchers believe these hand size pitted stones could also be used as anvils in a bipolar flaking technique that gives better control to the flint-knapper. Level 1 also produced a single uniface fragment that measures 17.2 by 14.2. The unifacially worked edge is a concave curve that is steep and has a retouched beveled edge (Figure 71).

Figure 67: Table of Test Unit 1 Lithic Artifacts, 41TV2408

Test Unit #	Depth (cmbd)	Level	Artifact Category	Number	PR Chrt	PR Crs Grn Chrt	SC Chrt	TR Chrt	TR Crs Gn Chrt	CC Chrt	CC Crs Gn Chrt	DC Chrt	SH Chrt	Heat Treated	Total	Total Weight (g)
1	145-150	1	Debitage	6			3			1			2	4	6	6.54
			Nutting Stone	1										1	1	127.00
			Uniface, Chert	1										1	1	2.50
1	150-160	2	Debitage	40	5	1	11	5	1	6	1	1	9	14	40	7.89
			Tested Pebbles, chert	4											4	5.70
			Thumbnail Scraper, Chert	1											1	3.92
			Utilized Flake, Secondary, Chert	1											1	10.16
1	160-170	3	Debitage	20	8		4	1		4			3	5	20	125.24
			Core, Chert	1											1	24.16
			Biface Fragment, Chert	1										1	1	1.64
			Utilized Flake, Secondary, Chert	1											1	13.68
			Total:		*13*	*1*	*18*	*6*	*1*	*11*	*1*	*1*	*14*	*26*	*77*	*328.43*
			Percentage:		*2.37%*	*0.18%*	*3.28%*	*1.09%*	*0.18%*	*2.00%*	*0.18%*	*0.18%*	*2.55%*	*4.74%*	*14.03%*	*6.85%*

Coarse (Crs) Grained (Grn) Chert (Chrt)

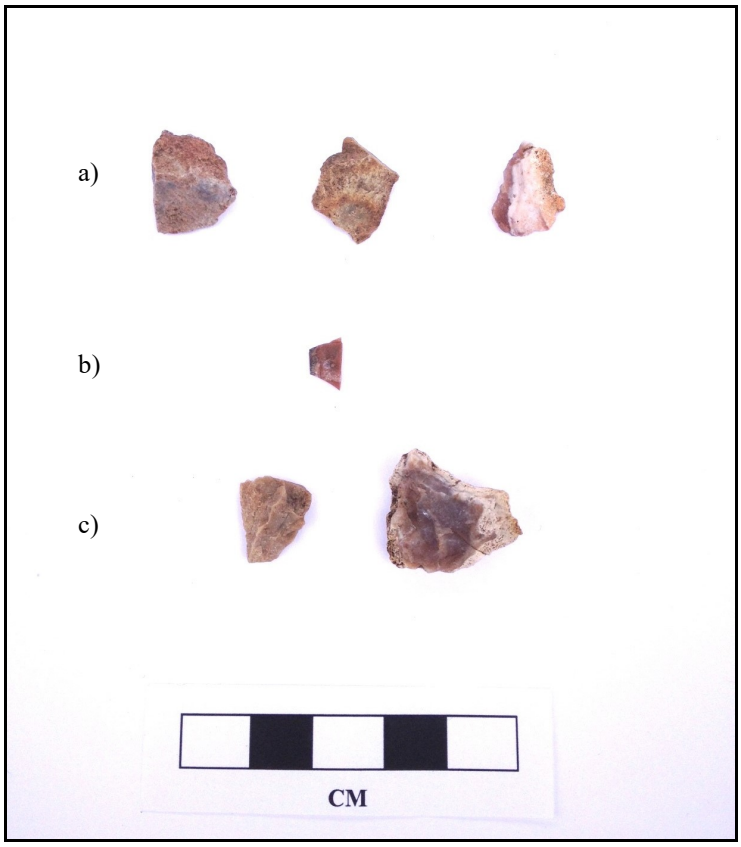

Figure 68: Test Unit 1, Level 1, Debitage Sample: a) Secondary Flakes b) Corticate Chip, c) Shatter

Figure 69: Test Unit 1, Level 1, Nutting Stone View One

Figure 70: Test Unit 1, Level 1, Nutting Stone View Two

Figure 71: Test Unit 1, Level 1, Uniface Fragment

Level 2 of Test Unit 1 contained the highest density of lithic debris (N=40) that included six primary flakes (five chert and one coarse grained chert), 11 chert secondary flakes, six tertiary flakes (five chert and one coarse grained chert), six corticate chips (five chert and one coarse grained chert), one chert decorticate chip, and nine pieces of chert shatter. Fourteen of these specimens were heat treated. Tertiary flakes exhibited trimming, pressure and resharpening techniques. Figure 72 a–f presents a sample of the debitage analyzed in Level 2. Four tested pebbles were also recovered from Test Unit 1, Level 2 (Figure 73). Other artifacts recovered from Level 2 include, one thumbnail scraper and one utilized flake (Figure 74 a and b). The thumbnail scraper measures 17.3 mm by 19.1 mm. It is unifacially retouched and exhibited extensive utilization. The secondary utilized chert flake measures 41.3 mm by 39.2 mm. Both lateral edges of the interior ventral face of the secondary flake exhibited the utilization which measures 27.1 mm of the length on one side and 31 mm one the opposite side of the specimen.

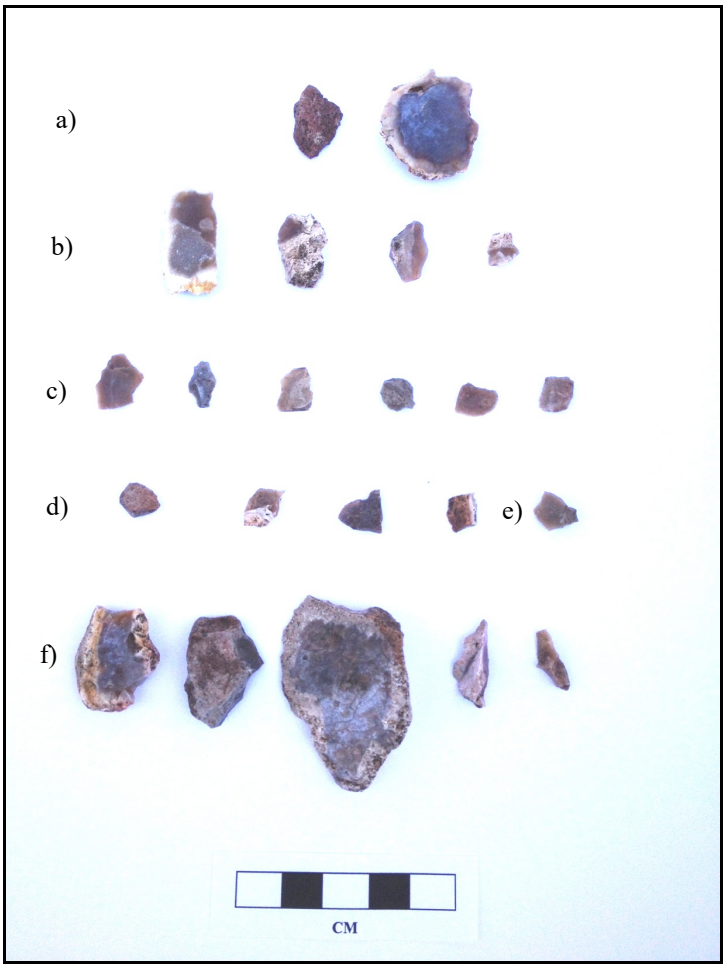

Figure 72: Test Unit 1, Level 2, Debitage Sample: a) Primary Flakes b) Secondary Flakes c) Tertiary Flakes d) Corticate Chips, e) Decorticate Chip, f) Shatter

Figure 73: Test Unit 1, Level 2, Tested Pebbles

Figure 74: Test Unit 1, Level 2, Tools: a) Thumbnail Scraper b) Utilized Secondary Flake

Test Unit 1, Level 3 produced 20 debitage which included eight chert primary flakes, four chert secondary flakes, one chert tertiary flake, four chert corticate chips and three pieces of shatter. Five of the lithic debitage specimens exhibited heat treatment. Figure 75 is a sample of primary flakes analyzed and Figure 76 a–d shows the examples of the remaining categories of debitage analyzed. Other lithic reduction debris and tools from Level 3 included a chert core, a utilized secondary chert flake, and a chert biface fragment (Figure 77 a–c). The core has at least three striking platform areas, and measures 43.9 mm by 29.5 mm. The secondary utilized flake measures 43.9 mm by 25.2 mm. The utilization observed on the secondary flake occurs on the dorsal side and measures 36.9 mm in length along the edge. The biface represents the distal lateral edge fragment of a projectile. It measures 16.3 mm by 9.7 mm and exhibited heat treatment that may have caused the failure in production.

In general the lithic materials recovered from Test Unit 1 showed an area of preliminary lithic production and manufacture of tool as well as repair and reworking of previously manufactured tools for continued use. The presence of the both formal and informal tools such as utilized flakes, scrapers, uniface, and biface fragment along with the presence of the nutting stone demonstrated that the site was occupied for an extended duration in order to exploit and process local resources that included food as well lithic raw materials.

Figure 75: Test Unit 1, Level 3, Primary Flake Sample

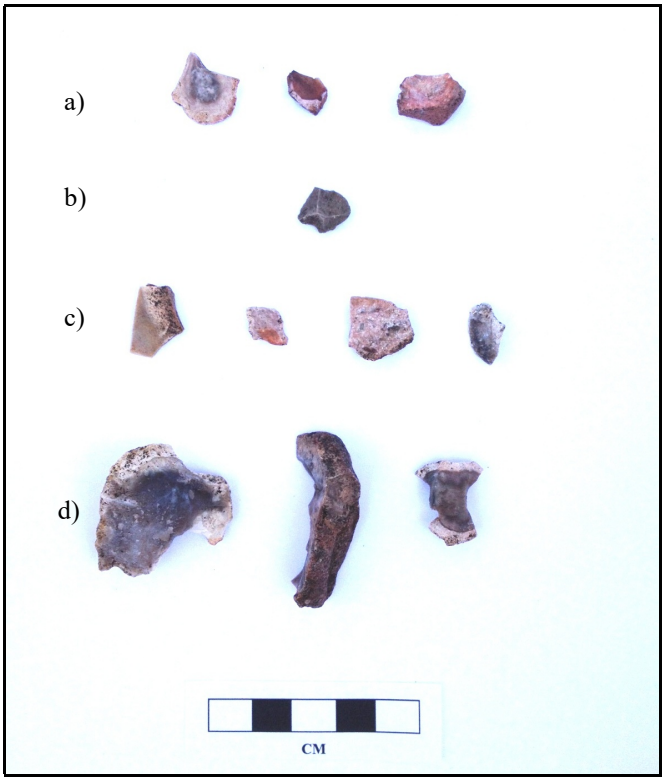

Figure 76: Test Unit 1, Level 3, Debitage Sample: a) Secondary Flake, b) Tertiary Flake c) Corticate Chips d) Shatter

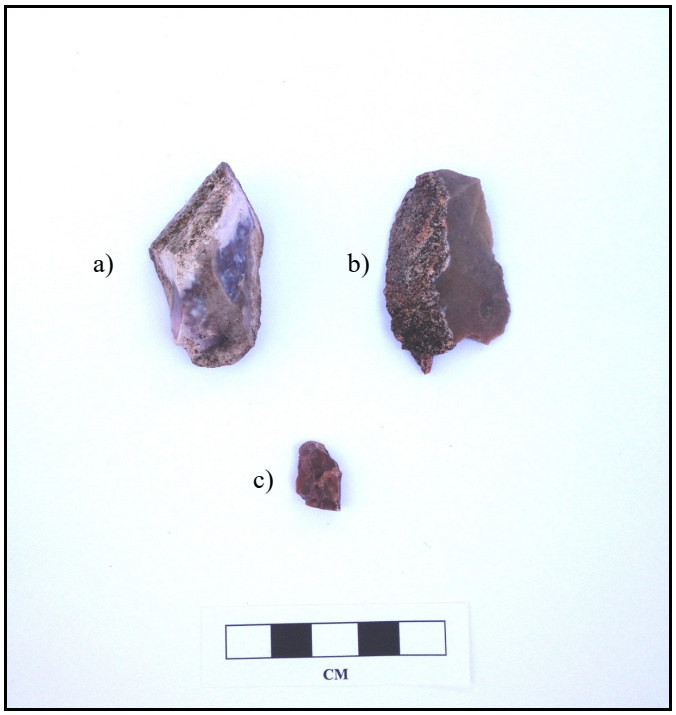

Figure 77: Test Unit 1, Level 3, Tools: a) Core b) Utilized Secondary Flake c) Biface Fragment

Test Unit 2, 41TV2408

Test Unit 2 represents 26.23 percent of the lithics (N=144) recovered during excavations at site 41TV2408 (Figure 78). Feature 1 was documented in the northeastern quadrant of Text Unit 2. The artifacts analyzed from this unit were collected as general unit artifacts and feature fill artifacts. The general unit artifacts from Test Unit 2 will be addressed first in this discussion followed by the analysis of artifacts recovered from the feature fill of Feature 1. Lithic debitage (N=10) from Level 1 of the general collection of Test Unit 2 included one primary chert flake, one secondary chert flake, on tertiary chert flake, two decorticate chips and five pieces of shatter. Six of the debitage specimens from Level 1 exhibited heat treatment. Figure 79 a–e is a sample of the debitage collection from Test Unit 1, Level 2. A chert core was also recovered from the general unit collection from Level 1 (Figure 80). The core measure 45.5 mm by 38.9 mm and exhibited at least three striking platforms.

Figure 78: Table of Test Unit 2 Lithic Artifacts, 41TV2408

Test Unit #	Depth (cmbd)	Feature #	Level	Artifact Category	Number	PR Chrt	SC Chrt	TR Chrt	CC Chrt	DC Chrt	SH Chrt	Heat Treated	Total	Total Weight (g)
2	151-160		1	Debitage	10	1	1	1		2	5	6	10	31.34
				Core, Chert	1								1	57.54
2	160-170		2	Debitage	33	6	7	5	6		9	12	33	98.80
				Tested Pebbles, chert	1								1	16.75
				Ironstone pebble	1								1	0.26
				Utilized Flake, Tertiary, Chert	1								1	0.85
*2	151-155	1	1	Debitage	12	1	2	1	2	2	4	6	12	27.18
				Ironstone rock	1								1	19.82
**2	155-160	1	1	Debitage	5						5	5	5	119.00
				Core, Chert	1								1	612.00
				Uniface, Course Grained Chert	1								1	314.00
				Utilized Flake, Secondary, Chert	1								1	59.00
2	160-172	1	2	Debitage	43	14	9	3	7		10	13	43	152.47
				Core, Chert	1								1	33.55
				Utilized Flake, Secondary, Chert	2								2	11.89
				Nutting Stone	1								1	1408.00
				Rounded pebble	1								1	43.00
2	155-172	1	1-2	Debitage	28	2	5	8	5		8	10	28	17.00
				Total:		*24*	*24*	*18*	*20*	*4*	*36*	*47*	*144*	*2650.91*
				Percentage:		*4.37%*	*4.37%*	*3.28%*	*3.64%*	*0.73%*	*6.56%*	*8.56%*	*26.23%*	*55.27%*

** Level 1 151-155 cm below datum*

*** Level 1 155-160 cm below datum*

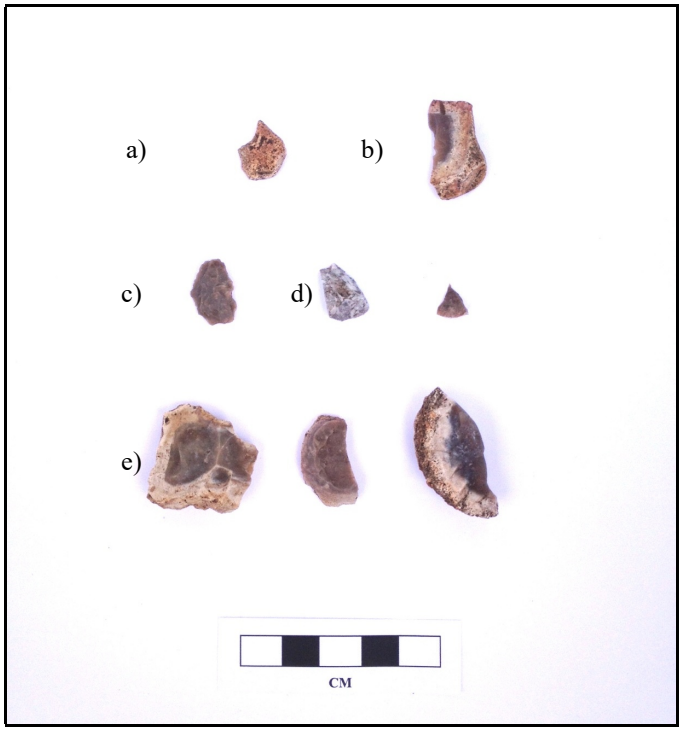

Figure 79: Test Unit 2, Level 1, Debitage Sample: a) Primary Flake b) Secondary Flake c) Tertiary Flake, d) Decorticate Chips e) Shatter

Figure 80: Test Unit 2, Level 1, Core

Lithic Debitage (N=33) from Level 2 of the general collection of Test Unit 2 contained six primary chert flakes, seven secondary chert flakes, five tertiary chert flakes, six chert corticate chips and nine pieces of shatter. Twelve pieces of the lithic debitage from this group of specimens exhibited heat treatment. Figure 81 a–e is a sample of debitage analyzed from Test Unit 2, Level 2. One tested pebble was also recovered from the general unit collection of Test Unit 2, Level 1 (Figure 82 a). A single tertiary chert flake was also documented as being utilized (Figure 82 b). The flake measure 23.8 mm by 43.2 mm. The termination of this flake is broken giving the piece a slightly square appearance. Utilization appears on both of the lateral edges of this tertiary flake and extends along its entire length (23.8 mm). Ironstone was not prevalent at the site, only a few pieces were documented. A single ironstone pebble that was highly polished and measuring 9.7 mm in diameter was recovered from the general unit collection from Level 2 (Figure 82 c).

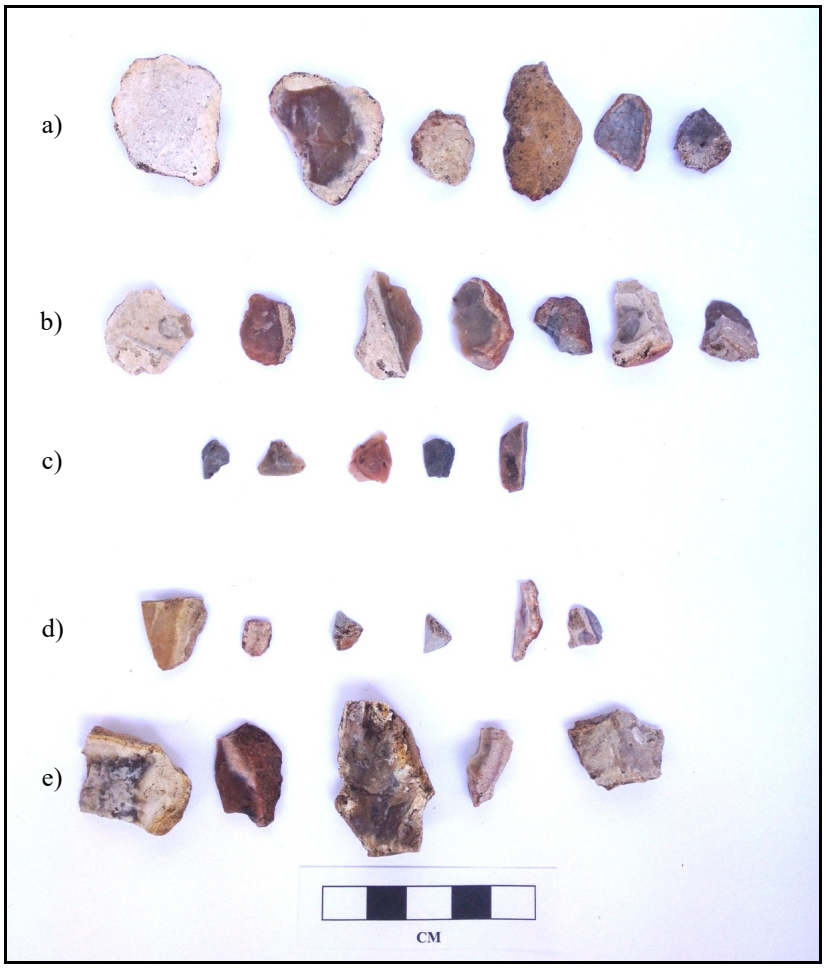

Figure 81: Test Unit 2, Level 2, Debitage Sample: a) Primary Flakes b) Secondary Flakes c) Tertiary Flakes d) Corticate Chips e) Shatter

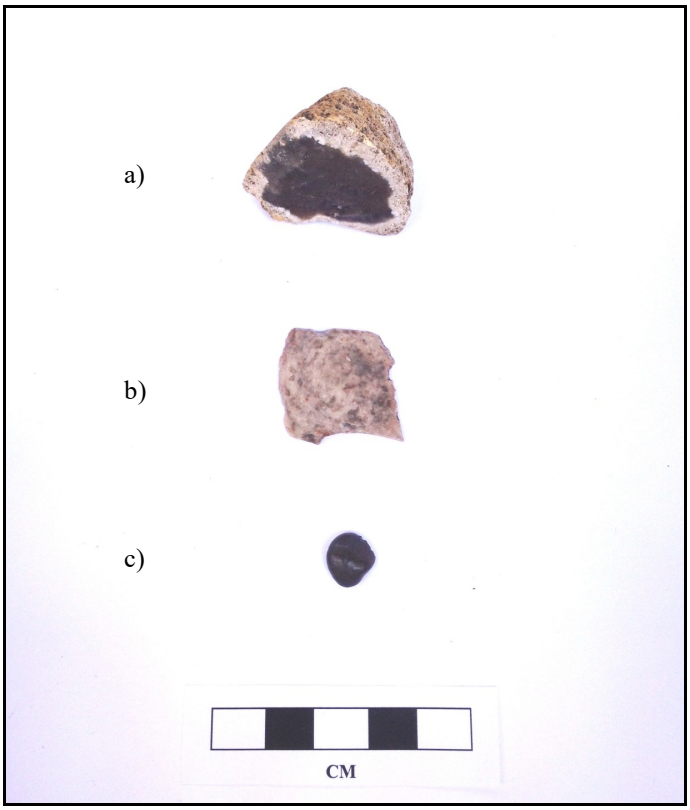

Figure 82: Test Unit 2, Level 2, Other Lithics: a) Tested Pebble b) Utilized Tertiary Flake c) Polished Ironstone Pebble

Test Unit 2, Feature 1, 41TV2408

Archaeologists initially uncovered the location of Feature 1 in Test Unit 2. The prehistoric inhabitants of the site constructed a burned rock hearth made of local raw materials gathered from the surrounding upland setting. The burned rocks were heavily corticated chert cobbles and gravels. Feature 1 was documented in the northeast quadrant of Test Unit 2. Archaeologists immediately noted the highly concentrated lithic raw material in that portion of the unit and began to collect it separately. The upper portion of Level 1 extending from 151 to 155 cm below datum contained a total of 12 debitage identified as a primary chert flake, two secondary chert flakes, one tertiary chert flake, two corticate chips, two decorticated chips, and four pieces of shatter (Figure 83 a–f). All of the specimens in this Level were heat treated. Two rabdotus shells were documented in the upper portion of Level 1, as mentioned in the Test Unit (Figure 83 g). Lastly, the upper portion of Level 1 contained a larger ironstone rock that had the appearance similar to a Waco Sinker that measured 27.2 mm by 20.7 mm (Figure 83 h). Although the ironstone does not show intentionally manipulated notching or grinding, the notched-grounded shape of the stone allows it to function as a sinker or bola stone.

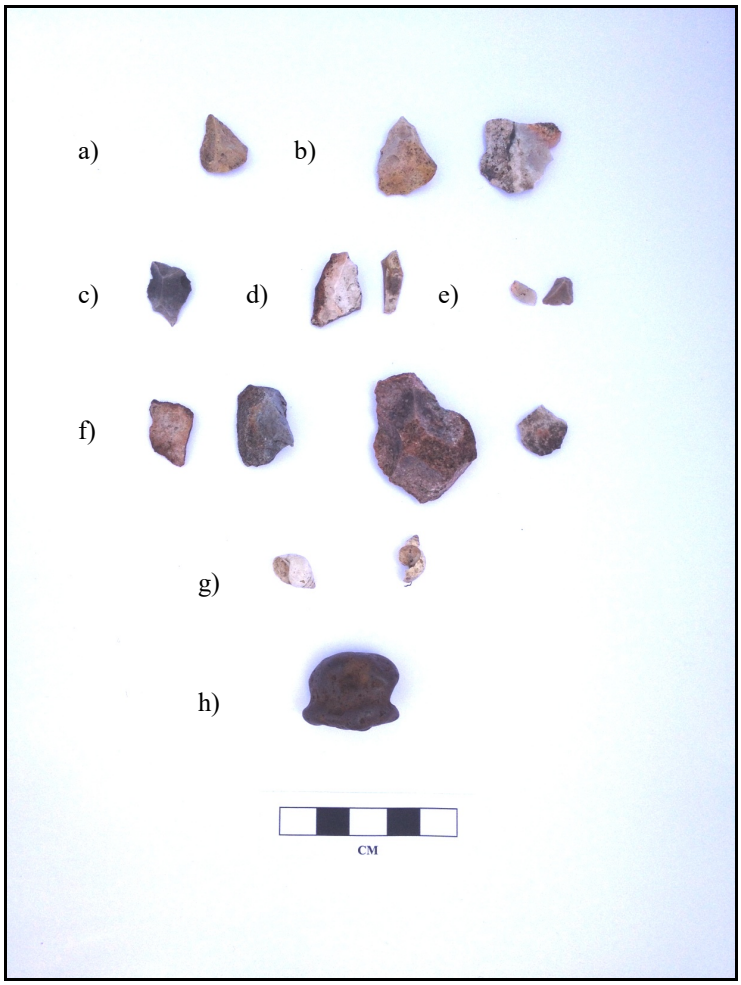

Figure 83: Test Unit 2, Level 1 Upper Portion, Feature 1, All Artifacts

The lower portion of Level 1 contained five pieces of chert shatter that was all heavily heat treated (Figure 84). A large core was also recovered from the lower portion of Level 1 (Figure 85). The core measured 105.9 mm by 95.2 mm and had large flakes struck off of all sides of the cobble. A large palm sized unifacial end scraper was also recovered from the lower portion of Level 1. It measured 107 mm by 97.2 mm and is essentially a large primary coarse grained chert flake that has extensive retouching and use ware on the dorsal side of flake (Figure 86). Lastly, a single utilized secondary chert flake was recovered from the lower portion of Level 1 within Feature 1 (Figure 87). The secondary utilized flake has measures 62.9 mm by 46.4 mm. Utilization appears on the dorsal side of the flake and measures 40.3 mm along its later edge.

Figure 84: Test Unit 2, Level 1 Lower Portion, Feature 1, Shatter

Figure 85: Test Unit 2, Level 1 Lower Portion, Feature 1, Core

Figure 86: Test Unit 2, Level 1 Lower Portion, Feature 1, Large End Scraper

Figure 87: Test Unit 2, Level 1 Lower Portion, Feature 1, Utilized Flake

Test Unit 2, Feature 1, Level 2 contained the highest concentration of lithic debris (N=43), which included 14 primary chert flakes, nine secondary chert flakes, three tertiary chert flakes, seven corticate chips, and ten pieces of chert shatter (Figure 88 and Figure 89 a–d). Thirteen of these specimens exhibited heat alteration. A single round pebble, a chert core, two utilized secondary chert flakes and one rabdotus shell were also recovered from Test Unit 2, Feature 1, Level 2 (Figure 90 a–e). The rounded pebble measure 38.9 mm by 33.1 mm, and it exhibited grinding and pecking on its surface. The core measures 39.9 mm by 28 mm and contains multiple striking platforms. The first utilized secondary flake measures 41.1 mm by 28.6 mm. Utilization appears on interior ventral surface of the flake on one lateral edge and measures 33.9 mm. The second utilized flake is hexagonal in shape and has steep retouched edge on all sides. This specimen measure 16.4 mm by 15.7 mm. Compared to other examples within the collection this specimen appears to represent an exhausted thumbnail scraper. A large nutting stone was recovered from Level 2 of Test Unit 2, Feature 1, located on the perimeter of the feature (Figure 91 and Figure 92). It measures 133 mm by 104.1 mm. The depression measures 19.8 m. This specimen is rather heavy and weighs 1408.00 grams. In terms of use it would more likely be used as a nut cracking platform rather than an anvil.

Figure 88: Test Unit 2, Level 2, Feature 1, All Primary Flakes

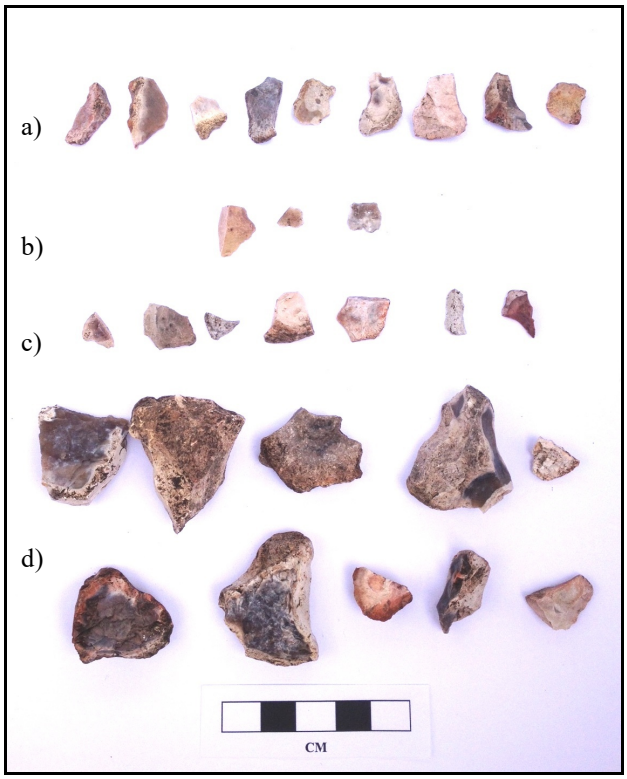

Figure 89: Test Unit 2, Level 2, Feature 1, All Debitage

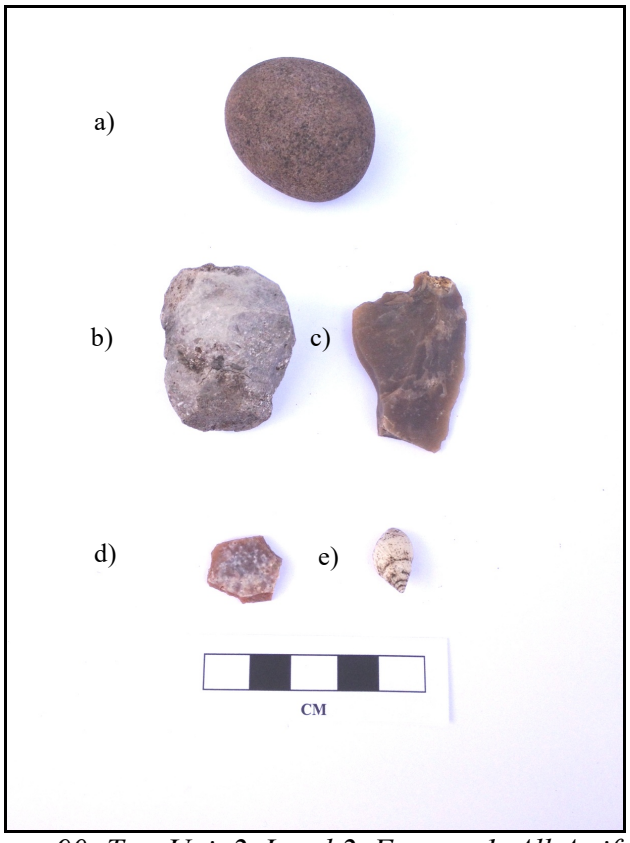

Figure 90: Test Unit 2, Level 2, Feature 1, All Artifacts

Figure 91: Test Unit 2, Level 2, Feature 1, Nutting Stone View One

Figure 92: Test Unit 2, Level 2, Feature 1, Nutting Stone View Two

Archaeologists collected a flotation sample from Test Unit 2, Feature 1 during its excavation. Prior to submitting the heavy and light fractions to Dr. Phil Dering, GTI archaeologist collected the debitage from the sample to include in the analysis. The flotation sample was collected from the top of the feature to the bottom (155–172 cm below datum) crossing Levels 1 and 2. A total of 28 debitage was recovered from the heavy fraction of the flotation sample. These included two primary flakes, five secondary flake, eight tertiary flakes, five corticate chips, and eight pieces of shatter (Figure 93 a–e). All debitage was identified as chert. Many of the tertiary were small and resulted from retouching of artifacts through pressure flaking, trimming and edging. Ten of the debitage exhibited heat alteration.

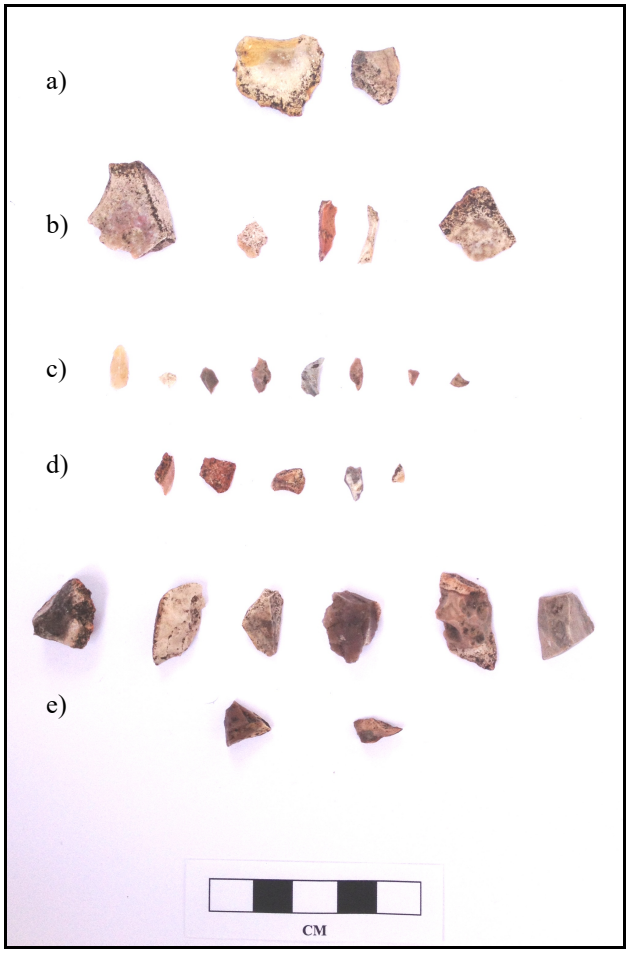

Figure 93: Test Unit 2, Level 2, Feature 1, Flotation Sample, All Debitage

In general the lithic materials recovered from the general collection of Test Unit 2 showed an area of preliminary lithic production and manufacture of tool as well as repair and reworking of previously manufactured tools for continued use. The cultural material recovered in and around Feature 1 within Test Unit 2 demonstrated that activities included processing of food. The large nutting stone on the perimeter of feature further supports food processing activities of local resources. In consideration of cultural materials present inside and outside Feature 1, archaeologists can say that the area surrounding the hearth was not simply used for food processing but also a possible gathering place where tool manufacturing occurred with some discard lithic production

material into hearth. This in turn indicates that the site was occupied over and extended period of time.

Test Unit 3, Lithics 41TV2408

Test Unit 3 represents 30.24 percent of the lithics (N=166) recovered during excavations at site 41TV2408 (Figure 94). Lithic debitage (N=11) recovered from Level 1 included four secondary flakes and seven pieces of shatter. Nine of these specimens exhibited heat treating. Figure 95 a and b show a sample of the debitage analyzed from Test Unit 3, Level 1. There were no other tools recovered from Test Unit 3, Level 1.

Figure 94: Table of Test Unit 3 Lithic Artifacts, 41TV2408

Test Unit #	Depth (cmbd)	Level	Artifact Category	Number	PR Chrt	SC Chrt	TR Chrt	CC Chrt	DC Chrt	SH Chrt	Heat Treated	Total	Total Weight (g)
3	114-120	1	Debitage	11		4				7	9	11	30.59
3	120-130	2	Debitage	119	22	38	12	19	1	27	43	119	299.79
			Core, Chert	1								1	22.89
			Tested Pebbles, chert	1								1	33.38
			Utilized Flake, Secondary, Chert	1								1	43.79
			Utilized Flake, Tertiary, Chert	1								1	1.29
			Biface Fragment, Chert	3							1	3	12.25
3	130-140	3	Debitage	27	9	4	4		1	9	10	27	57.40
			Utilized Flake, Secondary, Chert	1								1	10.52
			Utilized Flake, Tertiary, Chert	1								1	1.11
			Total:		*31*	*46*	*16*	*19*	*2*	*43*	*63*	*166*	*513.01*
			Percentage:		*5.65%*	*8.38%*	*2.91%*	*3.46%*	*0.36%*	*7.83%*	*11.48%*	*30.24%*	*10.70%*

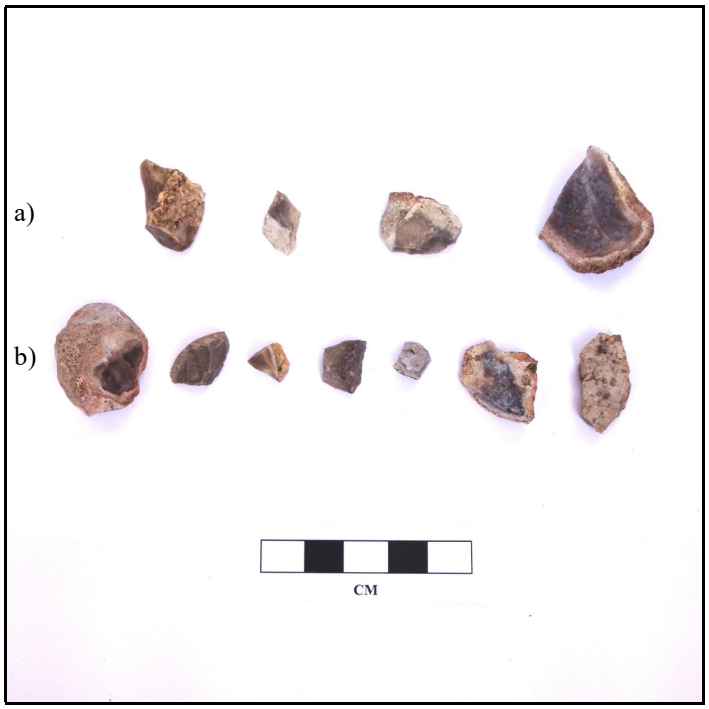

Figure 95: Test Unit 3, Level 1, Debitage Sample: a) Secondary Flakes b) Shatter

Test Unit 3, Level 2 produced the highest density of lithic artifacts across the site totaling 119 pieces of debitage. These were categorized as 22 primary chert flakes, 38 secondary chert flakes, 12 tertiary chert flakes, 19 chert corticate chips, one decorticate chert chip, and 27 pieces of chert shatter. Forty three of the debitage specimens were heat altered. Figure 96 a–f shows a sample of the debitage collected from Test Unit 3, Level 2. A single core and tested pebble were also recovered from Test Unit 3, Level 2. Other lithics recovered from Test Unit 3, Level 2 included one utilized tertiary flake, one utilized secondary flake, and three biface fragments (Figure 97 a–c). The core measures 40.6 mm by 27 mm and contains at least three striking platforms. The utilized tertiary flake has similar attributes to the thumbnail scraper documented in Test Unit 1, Level 2; it is slightly circular to square in shape and measures 16.1 mm by 15.4 mm. The dorsal surface of this tertiary flake has been heavily retouched and ground from utilization. The area of utilization measure 16 mm. The larger utilized secondary flake measures 66.4 mm by 54.5 mm. The utilization appears on the interior ventral surface of the flake. It is confined to the one of the lateral edge and the area of utilization measures 41.9 mm. The first biface is a medial lateral edge fragment of a biface measuring 17 mm by 15.6 mm.

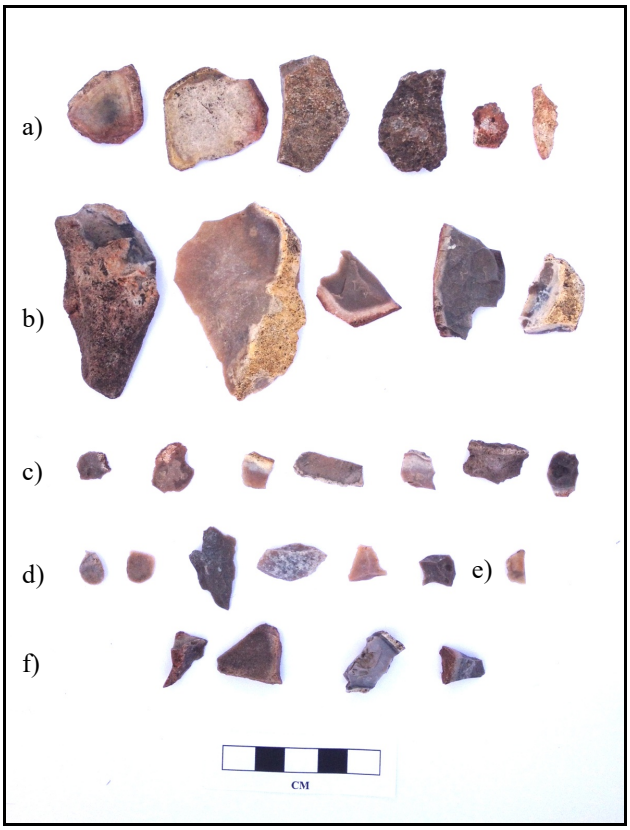

Figure 96: Test Unit 3, Level 2, Debitage Sample: a) Primary Flakes b) Secondary Flakes c) Corticate Chips d) Tertiary Flakes e) Decorticate Chi f) Shatter

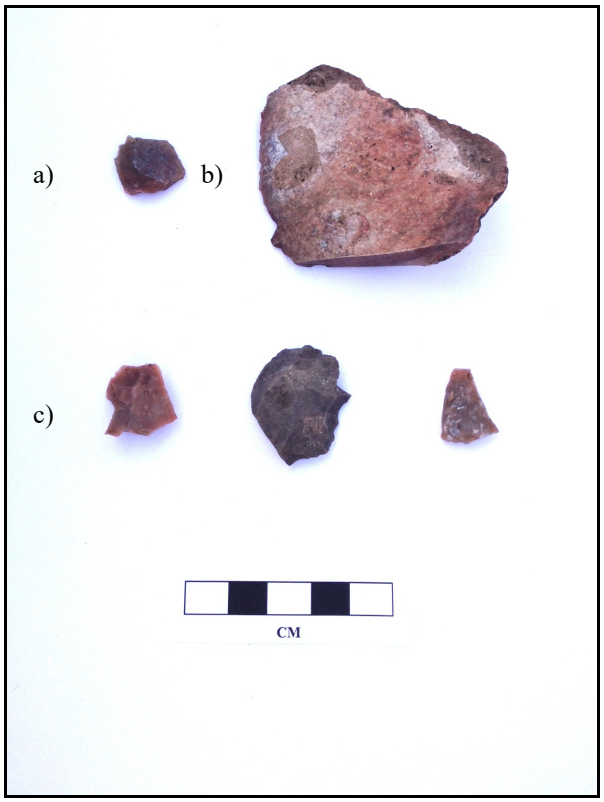

Figure 97: Test Unit 3, Level 2, Artifacts: a) Utilized Tertiary Flake b) Utilized Secondary Flake c) Biface Fragments

The second biface is also a medial lateral edge fragment that failed to extensive heat treatment. The second biface fragment measures 30.1 mm by 22.7 mm. The third biface is a medial lateral edge fragment of a project point as well, and it measures 19 mm by 12.9 mm.

Level 3 of Test Unit 3 contained a total of 27 pieces of debitage identified as nine primary flakes, four secondary flakes, four tertiary flakes, one decorticate chip, and nine pieces of shatter. Ten of the debitage specimens were heat altered. Figure 98 a–e represents a sample of the debitage recovered from Test Unit 3, Level 3. This Level also contained a single utilized tertiary flake and a utilized secondary flake (Figure 99 a & b). The utilized tertiary flake is a blade flake and measures 32 mm by 12.9 mm. It exhibited use ware on one lateral edge that extends from the platform to the termination. The use ware on the other lateral edge is confined to the termination of the blade and measures 13.9 mm. The use ware and minor trimming is evident on both dorsal and ventral side of the blade. The secondary utilized flake measures 36 mm by 42.2 mm and due to the broken termination is wider than it is long. The area of use measures 17.1 mm and shows evidence of trimming or retouching on the dorsal side of the flake.

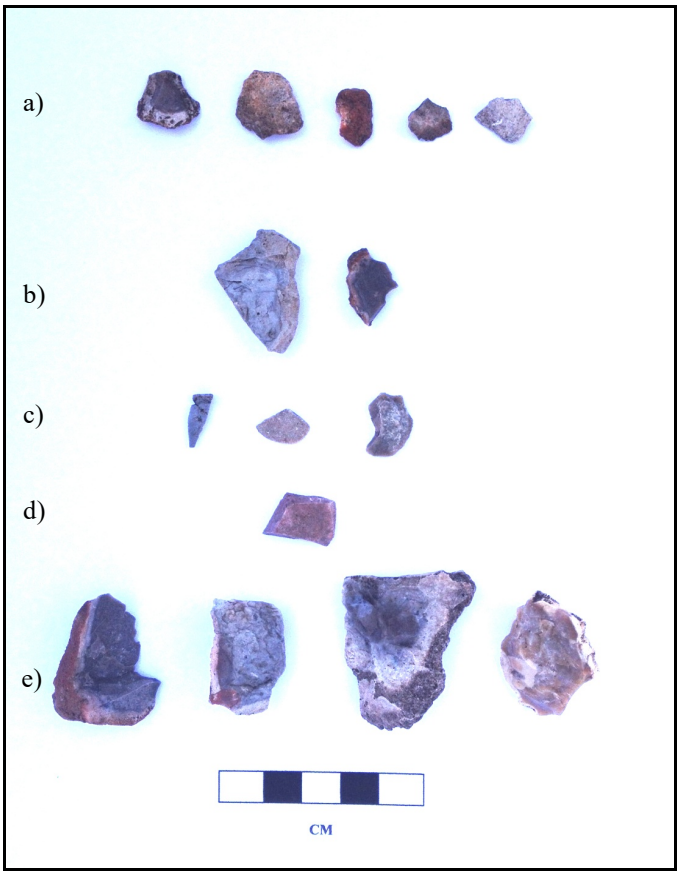

Figure 98: Test Unit 3, Level 3, Debitage Sample: a) Primary Flakes b) Secondary Flakes c) Tertiary Flakes, d) Decorticate Chip e) Shatter

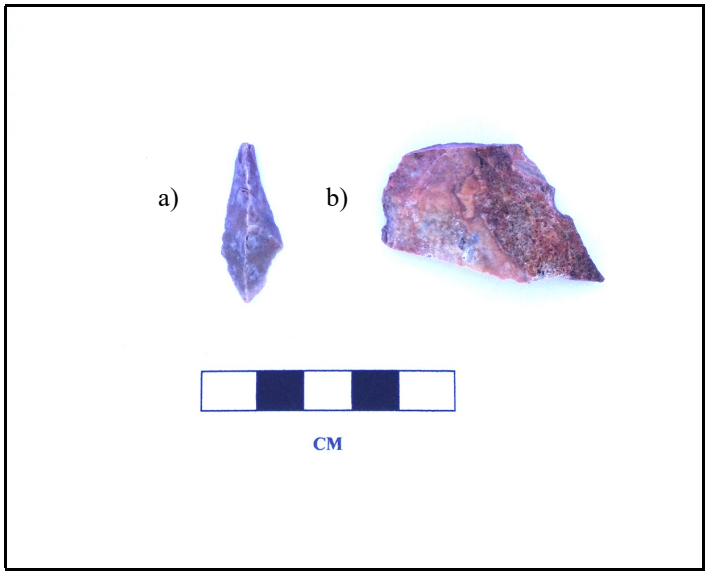

Figure 99: Test Unit 3, Level 3, Artifacts: a) Utilized Tertiary Flake b) Utilized Secondary Flake

The high density of lithic debris, formal and informal tools from Test Unit 3 identify this intra site area as an area of lithic reduction and tool manufacturing. The formal and informal tools show evidence of preliminary manufacture as well as repair and reworking of previously manufactured tools for continued use. The presence of the both formal and informal tools such as utilized flakes, blade flakes and biface fragment demonstrates that the site was occupied for an extended duration in order to exploit and process local resources and the tools necessary for processing from the available local lithic raw materials.

Test Unit 4, 41TV2408

Test Unit 4 represents 9.47 percent of the lithics (N=52) recovered during excavations at site 41TV2408 (Figure 100). Lithic debitage (N=20) recovered from Level 1 included nine primary flakes, six secondary flakes, one decorate chip and four pieces of shatter. All specimens were identified as chert and nine of these specimens exhibited heat treating. Figure 101 a–d represents a sample of debitage recovered from Test Unit 4, Level 1. Other artifacts recovered from Test Unit 4, Level 1 included a tested pebble, an end/side scraper, and end scraper (Figure 102 a–c). The tested pebble measures 45 mm by 24.1 mm. The end/side scraper is a tertiary flake with extensive retouching on the termination of the flake and on one of the lateral edges. It measures 45 mm by 25.2 mm. These types of scrapers span the Paleoindian to Late Prehistoric times (Turner and Hester 1999:280). The end scraper is a secondary utilized flake, and it measures 27.4 mm by 20.4 mm. This end scraper is steeply beveled and retouched along the dorsal side of the flakes termination.

Figure100: Table of Test Unit 4 Lithic Artifacts, 41TV2408

Test Unit #	Depth (cmbd)	Level	Artifact Category	Number	PR Chrt	SC Chrt	DC Chrt	SH Chrt	Heat Treated	Total	Total Weight (g)
4	28-40	1	Debitage	20	9	6	1	4	9	20	63.65
			Tested Pebbles, chert	1						1	25.20
			Scraper, Tertiary flake, Chert	1						1	12.44
			Scraper, Secondary, Chert	1						1	7.59
4	40-50	2	Debitage	15	5	7		3	5	15	114.64
			Utilized Flake, Secondary, Chert	1						1	18.31
4	50-60	3	Debitage	12	1	2		9	11	12	79.58
			Utilized Flake, Secondary, Chert	1						1	81.21
			Total:		*15*	*15*	*1*	*16*	*25*	*52*	*402.62*
			Percentage:		*2.73%*	*2.73%*	*0.18%*	*2.91%*	*4.55%*	*9.47%*	*8.39%*

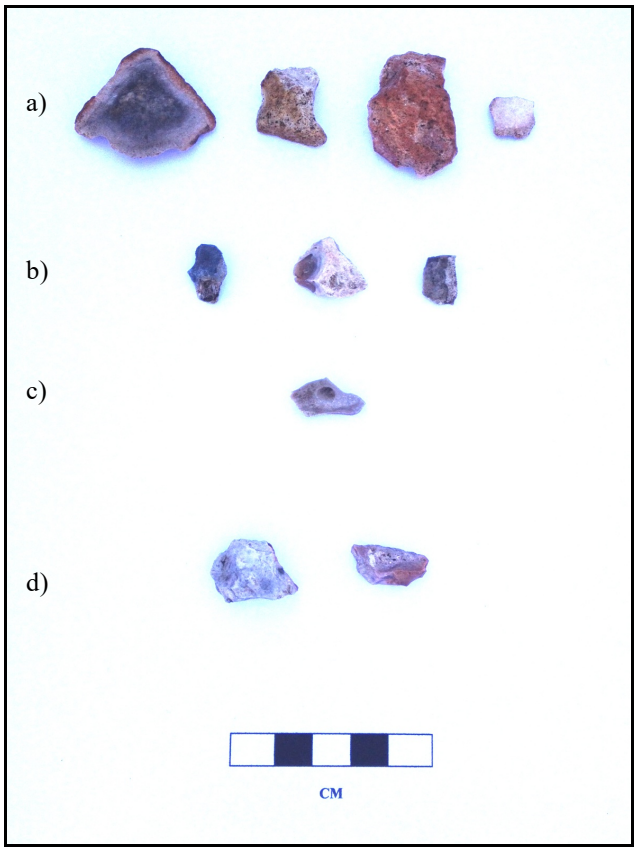

Figure 101: Test Unit 4, Level 1, Debitage Sample: a) Primary Flakes b) Secondary Flakes c) Decorticate Chip d) Shatter

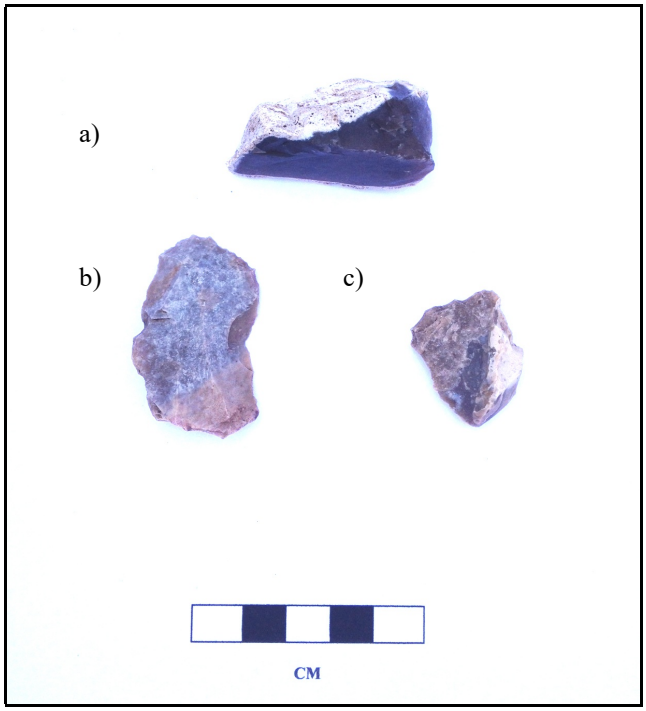

Figure 102: Test Unit 4, Level 1, Artifacts: a) Core, b) End/Side Scraper c) End Scraper

Level 2 contained a total of 15 debitage which were categorized as five primary, seven, secondary, and three pieces of shatter. Five of the specimens showed signed of heat alteration and all debitage was identified as chert. Figure 103 a–c represents a sample of debitage recovered from Test Unit 4, Level 2. One secondary utilized flake was also recovered from Level 2 of Test Unit 4 (Figure 104). It measures 50.2 mm by 35.2 mm and exhibited signed of retouching, beveling and use along the dorsal side of the termination and over a portion of one lateral edge. Though it shares some characteristics with scrapers its shape is atypical and is a result from a hinge fracture observed on the ventral side of the flake, which typically happened when the flake is over shot.

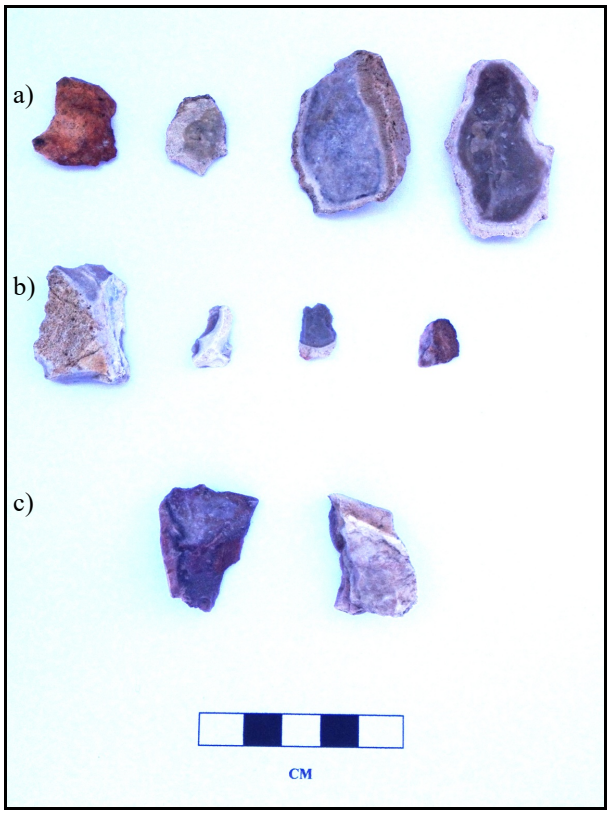

Figure 103: Test Unit 4, Level 2, Debitage Sample: a) Primary Flakes b) Secondary Flakes c) Shatter

Figure 104: Test Unit 4, Level 2, Utilized Flake

Test Unit 4, Level 3 contained 12 pieces of debitage classified as one primary flake, two secondary flakes, and nine pieces of shatter. All specimens were identified as chert and 11 showed signed of heat alteration. Figure 105 a–c represents a sample of debitage from Test Unit 4, Level 3. Archaeologists also recovered a secondary utilized chert flake from Level 3 (Figure 106). It measures 83.9 mm by 49.2 mm. This large flake exhibits retouched and use ware on one lateral edge along the dorsal side of the flake.

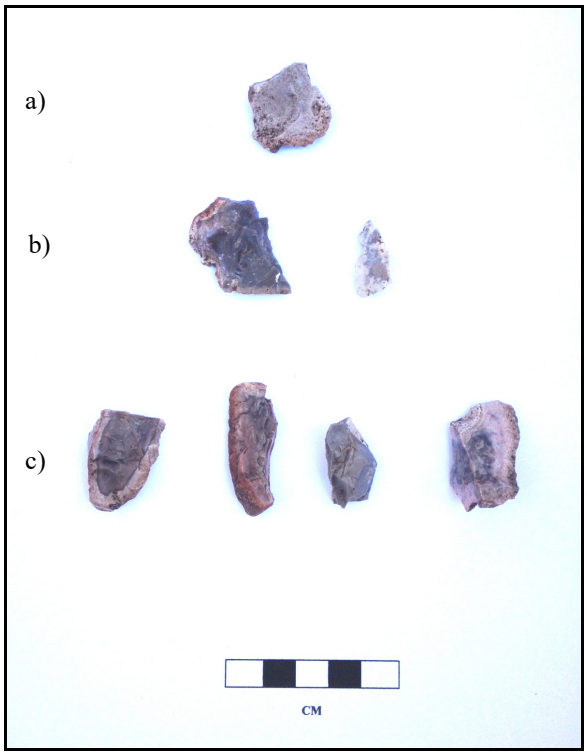

Figure 105: Test Unit 4, Level 3, Debitage Sample: a) Primary Flake b) Secondary Flakes c) Shatter

Figure 106: Test Unit 4, Level 3, Utilized Flake

In general the lithic materials recovered from Test Unit 4 showed an area of preliminary lithic production and manufacture of tool. The presence of the formal and informal tools such as scrapers and utilized flakes demonstrated that the site was occupied for an extended duration in order to exploit and process local resources that included food as well lithic raw materials.

Test Unit 5, Lithics 41TV2408

Test Unit 5 represents 3.46 percent of the lithics (N=19) recovered during excavations at site 41TV2408 (Figure 107). Lithic debitage (N=12) recovered from Level 1 included three secondary flakes and nine pieces of shatter. All specimens were identified as chert and ten of these specimens exhibited heat treating. Figure 108 a and b represent a sample of debitage recovered from Test Unit 5, Level 1. No other tools were documented in Test Unit 5, Level 1.

Figure 107: Table of Test Unit 5 Lithic Artifacts, 41TV2408

Test Unit #	Depth (cmbd)	Level	Artifact Category	Number	PR Chrt	SC Chrt	TR Chrt	SH Chrt	Heat Treated	Total	Total Weight (g)
5	81-90	1	Debitage	12		3		9	10	12	26.36
5	90-100	2	Debitage	5	2	2	1		2	5	12.25
			Core, Chert	1						1	45.10
			Utilized Flake, Secondary, Chert	1						1	2.49
			Total:		*2*	*5*	*1*	*9*	*12*	*19*	*86.2*
			Percentage:		*0.36%*	*0.91%*	*0.18%*	*1.64%*	*2.19%*	*3.46%*	*1.80%*

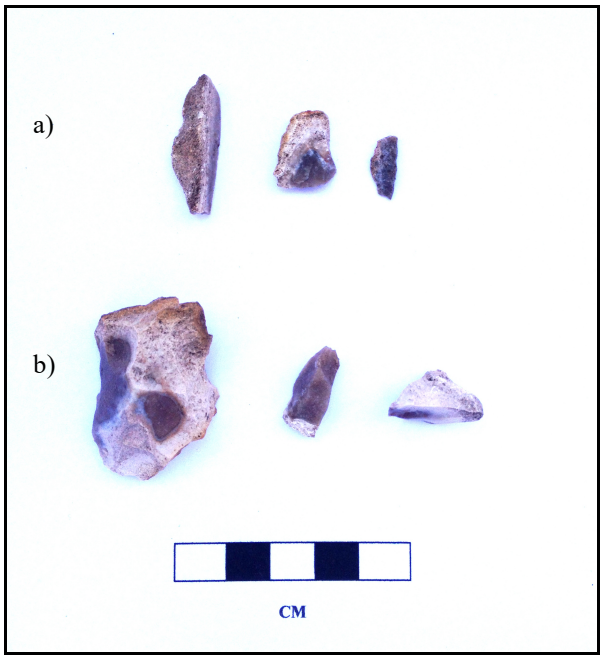

Figure 108: Test Unit 5, Level 1, Debitage Sample: a) Secondary Flakes b) Shatter

Test Unit 5, Level 2 contained five pieces of lithic debitage categorized as two primary flakes, two secondary flakes, and one tertiary flake. All debitage was identified as chert and two of the specimens showed signs of heat alteration. Figure 109 a–c represents a sample of debitage recovered from Test Unit 5, Level 2. Also covered from Test Unit 5, Level 2 is a core and a single secondary utilized flake (Figure 110 a and b). The core measures 41.7 mm by 32.9 mm and contains multiple striking platforms of flake removal. The utilized secondary flake measures 27.6 mm by 22.6 mm. This specimen is triangular in shape and has a spur on the end indicated that it may have been used as a graver. Gravers also span Paleoindian to Late Prehistoric times and were used for engraving or as cutting implements (Turner and Hester 1999: 279).

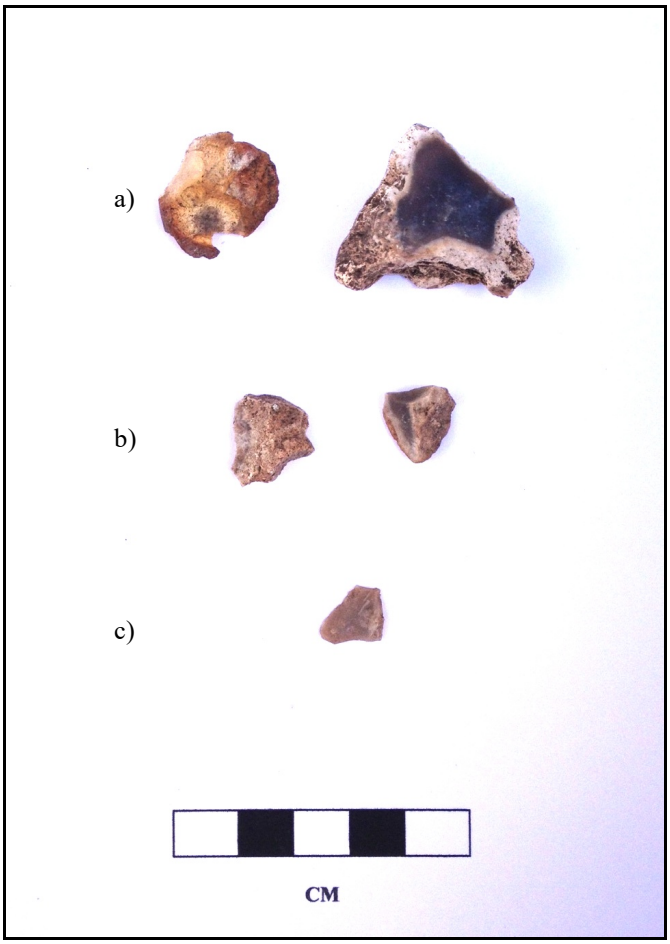

Figure 109: Test Unit 5, Level 2, Debitage Sample: a) Primary Flakes b) Secondary Flakes c) Tertiary Flake

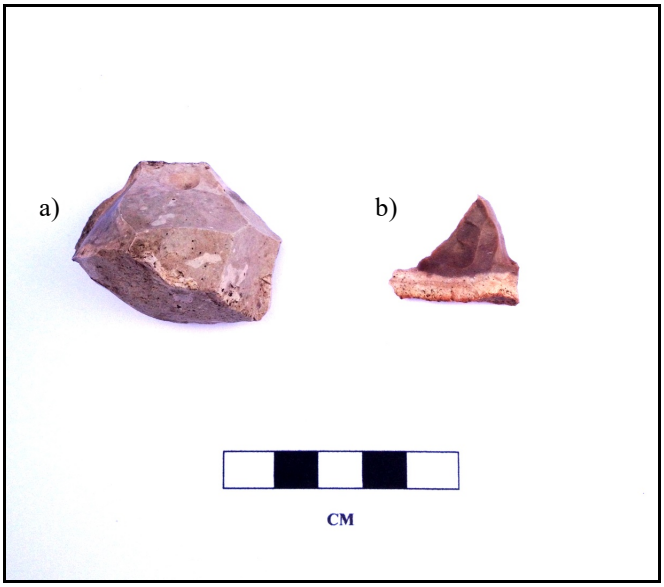

Figure 110: Test Unit 5, Level 2, Artifacts: a) Core b) Utilized Flake/Graver

Test Unit 5 contained the lowest density of cultural materials recovered from site 41TV2408. In general the lithic materials recovered from Test Unit 5 showed an area of preliminary lithic production and manufacture of tool. The presence of the formal and informal tools such as utilized flakes and utilized flake/graver demonstrated that the site was occupied for an extended duration in order to exploit and process local resources that included food as well lithic raw materials. The low density of artifacts observed in this area of the site, however, indicates that this area was not an intentional activity area for tool manufacturing.

Test Unit 6, Lithics 41TV2408

In consultation with the THC, Test Unit 6 was place north of Test Unit 2 in order to further investigate Feature 1, a burned rock hearth. Test Unit 6 represents 16.58 percent of the lithics (N=91) recovered during excavations at site 41TV2408 (Figure 111). Artifacts collected from Test Unit 6 were separated into general unit collection and feature fill collection. Feature 1 was not encountered until the beginning of Level 2; therefore, Level 1 represents the general unit collection. Upon excavation of Level 2, archaeologists noted that Feature 1 was somewhat scattered and covered the entire unit. Level 2 was designated as feature fill and artifacts where collected separately. Lithic debitage (N=67) recovered from Level 1 was from the general unit collection of Test Unit 6. The debitage was categorized as 16 primary flakes, 20 secondary flakes, five tertiary flakes, seven corticate chips, and 19 pieces of shatter. All debitage were identified as chert and 21 of these specimens exhibited heat treating. Figure 112 a–e is a representative sample of debitage recovered from the general unit collection of Test Unit 6, Level 1. No other tools were documented in Test Unit 6, Level 1.

Figure 111: Table of Test Unit 6 Lithic Artifacts, 41TV2408

Test Unit #	Depth (cmbd)	Feature #	Level	Artifact Category	Number	PR Chrt	SC Chrt	TR Chrt	CC Chrt	SH Chrt	Heat Treated	Total	Total Weight (g)
6	145-160		1	Debitage	67	16	20	5	7	19	21	67	284.76
6	160-170	1	2	Debitage	22	4	8			10	10	22	139.25
				Utilized Flake, Secondary, Chert	2							2	19.50
				Total:		*20*	*28*	*5*	*7*	*29*	*31*	*91*	*443.51*
				Percentage:		*3.64%*	*5.10%*	*0.91%*	*1.28%*	*5.28%*	*5.65%*	*16.58%*	*9.25%*

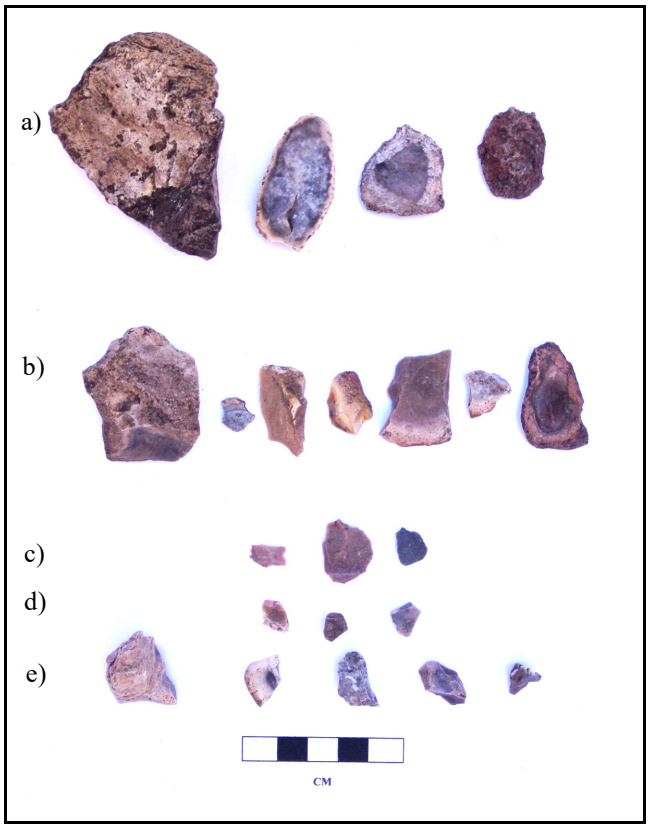

Figure 112: Test Unit 6, Level 1, Debitage Sample: a) Primary Flakes b) Secondary Flakes c) Tertiary Flakes d) Corticate Chips e) Shatter

Test Unit 6, Feature 1, Lithic Analysis, 41TV2408

A total of 22 pieces of debitage was recovered from the feature fill associated with Feature 1 in Test Unit 6, Level 2. These debitage were classified as four primary flakes, eight secondary flakes and ten pieces of shatter (Figure 113 a–c). Also recovered from Level 2 within Feature 1 were two secondary utilized flakes (Figure 114). The first secondary utilized flake measures 40.1 mm by 20.4 mm. One lateral edge on the dorsal side of the flake exhibits use ware. The other secondary utilized flake measures 42.7 mm by 27 mm. This specimen shows signs of battering and retouching at the termination of the flake on the dorsal side as well as along a section of the lateral edge that measures 22.6 mm in length. The retouching along the lateral edge gives the appearance of an unfinished or incomplete notch that may be intentional. The general shape of this flake is similar to the utilized flake specimen from Test Unit 4, Level 2. The resulting indention on this specimen is not intentional, however, and was clearly the result of the hinge fracture present on the ventral side of the flake.

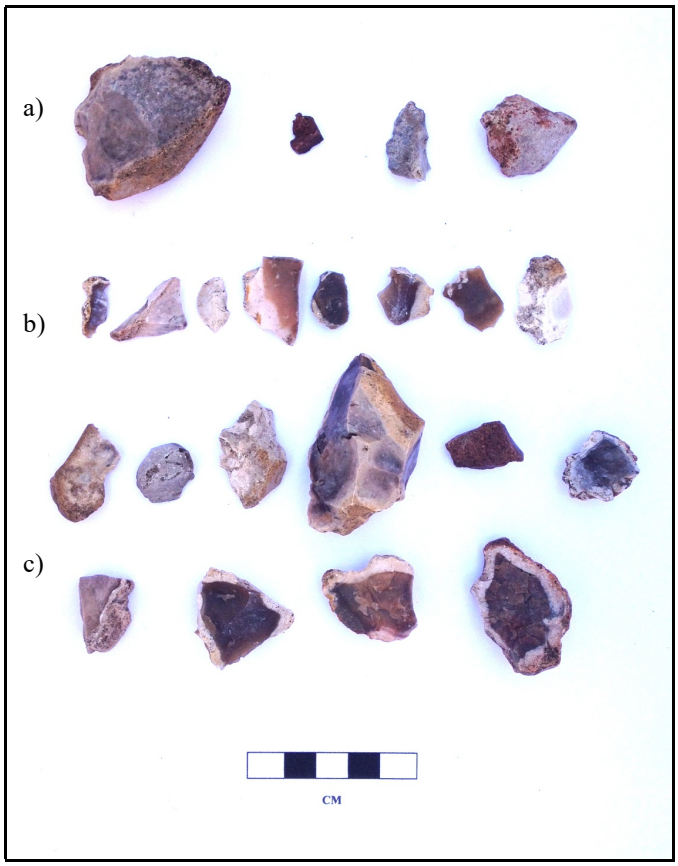

Figure 113: Test Unit 6, Feature 1, Level 2, All Debitage

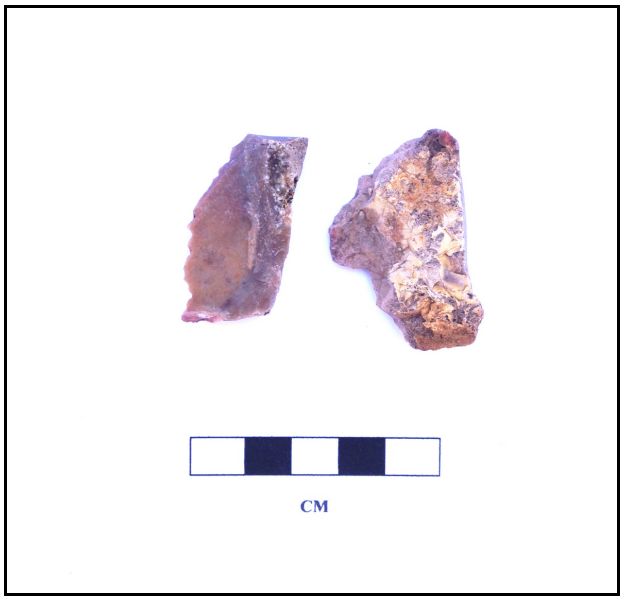

Figure 114: Test Unit 6, Feature 1, Level 2, All Utilized Flakes

In general the lithic materials recovered from the general collection of Test Unit 2 showed an area of preliminary lithic production and manufacture of tools. As noted previously in the Test Unit Descriptions the burned rocks in Test Unit 6 were smaller and more severely cracked indicating that they were closer to the centrally heated area where

the food resource was being cooked. A much lower density of artifacts was recovered from this portion of Feature 1 in Test Unit 6, Level 2. Archaeologists also noted that Feature 1 in Test Unit 6 was more dispersed. Over all Feature 1 appeared to be a social gathering place where food was being processed and cooked, as well as, a place where tools were manufactured and used in the food production process.

Macrobotanical Analysis

The purpose of this analysis is to provide an assessment of the botanical remains from 41TV2408. The data will be used to assess the nature and condition of the plant remains from this site.

Methods

Flotation is a method of recovering organic remains from archaeological sediments by using water to separate both heavy and soluble inorganic particles from plant parts and small animal bone. The material floating to the surface, called the light fraction, is caught on a fine mesh screen or strainer. In most cases carbonized plant material, the subject of this analysis, is separated into the light fraction. The material that sinks to the bottom is the heavy fraction. The heavy fraction is usually composed of rocks, bones, and other larger clasts in the archaeological sediments. The clay and silt portions of the sediments remain suspended in water and pass through the screens. In this study both the light and heavy fractions were submitted for analysis.

The analysis followed standard archaeobotanical laboratory procedures. The volume of the light fraction is measured first. In most cases up to 150 ml of light fraction from each sample is set aside for analysis. The portion to be analyzed is passed through a nested set of screens of 4-mm, 2-mm, 1-mm, and 0.450-mm mesh and examined for charred plant fragments, which are separated for identification.

Plant material is sorted into two categories –woody fragments, and seed/fruit fragments including maize or agave parts when present. Identification of carbonized wood is accomplished by using the snap technique, examining the fragments at 8 to 300 magnifications with a hand lens or a binocular dissecting microscope, and comparing the material to samples in the archaeobotanical herbarium. All seed identifications are made using seed manuals and reference collections at Shumla Archaeobotanical Services. Only charred plant material is included in the analysis, because uncarbonized material is consumed by insects, fungi and bacteria and does not survive more than a few years in the deposits of open sites. Wood charcoal fragments large enough to be manipulated are examined and identified from each flotation sample. Fragments smaller than 2- or 3- mm cannot be manipulated and are usually placed in the indeterminate category.

Disturbance Indicators

Sample content may be affected by various biological disturbance factors, including insect or small mammal activity and plant root growth. In an effort to assess this impact, the amounts of insect parts, termite pellets, gastropods, leaves, mammal remains (including scat), and modern uncharred seeds are estimated for each flotation sample. These estimates are reported on a scale of 1-5 (+), 6-25 (++), 26-50 (+++), and over 50 (++++). Termite pellets occur in higher numbers when samples are taken from an area containing wood that has been exposed to the elements for a long time before burning. In the desert, this can occur in dead trees or roots, in which case the termite

pellets can be present in any locus that infested wood is burned, such as in a hearth or roasting pit.

Results Conclusion

Results of the analysis are presented in Figure 115. Recovery of charred plant material in the flotation samples is poor. The total mass of the charcoal in each fraction is less than .01g. Roots, leaves, gastropods, and insect chitin constitute the majority of the abundant disturbance indicators.

Figure 115: Table Sample results, sample FS 7, 41TV2408.

Fraction	Sample No.	Feature	Light fraction vol. (ml), wt. (g)	Roots (r), Insect Parts (ip), Gastropods (gp), leaves (l), gravel (g)	Taxon	Part	Count	Mass (g)
Light	FS 7	1	30 mL, 4.7 g	r++++, gp+++, ip+,	Indeterminate hardwood	Wood	5	<0.01
Heavy	FS 7	1	168 mL, 139.8 g	g++++, gp++++, ip+	Indeterminate hardwood	Wood	2	<0.01

The carbonized plant materials consist of small wood fragments and measure less than 3mm. Although the fragments are too small to identify to genus or species it is possible to tell that they are not fragments of juniper or pine, but rather from a seed-bearing hardwood tree or shrub. No seed, fruit, or nut fragments were noted in the sample.

Therefore the sample does not provide sufficient botanical data to reflect past land-use practices or environmental conditions. If the sample is representative of the overall conditions of preservation at 41TV2408, then the site within the project APE does not warrant further archaeobotanical investigation.

Conclusion and Recommendations

GTI Environmental, LLC (GTI) presented the results of the National Register of Historic Places (NRHP) and State Archaeological Landmark (SAL) testing investigations, in accordance with the Antiquities Code of Texas (13TAC26) and the National Historic Preservation Act (36CFR800), and the Texas Historical Commission's (THC) written recommendations on December 20, 2012. The hand excavated 1 x 1 meter test unit investigation and report was prepared for the Austin Independent School District's (AISD) Additional 2.7 Acre Access Road Project associated with its 27.36 Acre New Bus Terminal Project and 8 Acre Access Road Project in Travis County, Texas. The testing investigation conformed to the National Historic Preservation Act (NRHP) requirement to assess effects a federal *Undertaking* [36CFR800.16(y)] may have to *Historic Properties* (36CFR800.5). The AISD 27.36 Acre Bus Terminal Project, 8 Acre Access Road Project, and the Additional 2.7 Acre Access Road Project, is considered the overall direct *Area of Potential Effect* (APE), in accordance with 36CFR800.16(d).

GTI conducted the fieldwork from February 6, 2013 through February 14, 2013. The research design proposed five to ten test units within the Additional 2.7 Acre Access Road Project APE. GTI consulted with THC/Tx-SHPO on February 14, 2013 and February 19, 2013. A total of six test units were excavated. Archaeologists encountered a single hearth feature in Test Unit 2 and Test Unit 6 at the southern boundary of the project APE. A one gallon soil sample was obtained from Test Unit 2 hearth feature. Neither faunal (bones), nor charcoal was visible after screening the soil sample and flotation based on examination through an Olympus microscope that matched the amounts required for AMS dating; i.e. AMS requires at least 15 to 20 milligrams. Archaeologists attempted to excavate a 1x2 meter unit east and adjacent to Shovel Test 4 (Iruegas 2013) that indicated the deepest part of the prehistoric midden. A large rodent borrow was present further east of the 1x2m test unit. NRHP testing in Test Unit 4 established that this area of the midden was intact based on the discovery of a scrapper lying flat on a surface with other flat lying burned rock near the bottom of Level 1. During excavation of Test Unit 4 at Level 3, archaeologists encountered a large cavity associated with the rodent borrows that was at least 40 cm deep and comprised at least 60 percent of the Test Unit 4. The buried prehistoric cultural midden deposit evident in Shovel Test 4 during the survey had been truncated by the rodent burrow and compromised the data in this area of the project APE. In consultation with Mr. Brad Jones of THC on Feb. 14, 2013, it was decided to terminate Test Unit 4 and excavate another test unit in the northern area of the project APE and another test unit where the hearth feature was documented. Our efforts resulted in a 1x2 meter unit (Test Unit 2 and Test Unit 6). Archaeologists encountered bedrock in each test unit, except Test Unit 4, within the first three 10 cm Levels. Archaeologists encountered a very high frequency of lithics and dispersed burned rock in the test units, but no evidence of bones, diagnostic artifacts, such as arrow heads, dart points or projectile points, or datable organic charcoal material.

Due to the dearth of special samples available at site 41TV2408 within the project APE, archaeologists only were able to conduct macrobotanical analysis of the soil sample

from the hearth, Feature 1. According to Dr. Phil Dering, the specimens in the light and heavy fractions were small and genus or species could not be determined. Therefore the sample did not provide sufficient botanical data to reflect past land-use practices or environmental conditions. Dr. Dering was able to conclude, however, specimens were not fragments of juniper or pine, but rather from a seed-bearing hardwood tree or shrub. The macrobotanical data obtained from the hearth feature was consistent with a prehistoric environmental setting where inhabitants engaged in food production with nutting stones, hearths, and tool production. The lack of diagnostic artifacts and radio carbon datable material prevents archaeologists from placing these prehistoric activities within a precise chronological context. Because of the lack of diagnostic artifacts, bone samples, and organic charcoal samples, the wide range of cultural and scientific resources considered in the research design could not be addressed. In general, the cultural assemblage recovered from the test units was less productive than anticipated 13TAC26.21(d)(C) that would warrant mitigation. Based on the intact hearth feature in Test Unit 2 at the southern end of the project APE, it is highly probable that other hearth features and cultural deposits are present and intact along the toe-slope outside the project APE.

Accordingly, it is GTI's Principal Investigator's opinion that the portion of 41TV2408 within AISD's Additional 2.7 Acre Access Road Project APE is not worthy for SAL designation or eligible for listing in the NRHP. The site's (41TV2408) worthiness for designation as a SAL or eligibility for listing in the NRHP outside the project APE is unknown. GTI recommends that the project may proceed as planned provided no additional acreage is required for the AISD Access Road Project. If additional land is required, AISD should consult with the THC regarding the need for further NRHP and SAL testing. It should be noted that the landowner that gave AISD the permanent easement for the access road has requested to keep the artifacts. Therefore, the artifacts will not be curated at the Texas Archaeological Research Laboratory. The SAL Testing Investigation documentation remains the property of the State of Texas.

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